24TH

ANNUAL REPORT

ON THE

HEALTH OF ST. HELENS

For the Year ending Dec. 31st, 1896.

BY

JOHN ROBERTSON,

M.D., B.Sc (PUB. HEALTH), &c.

Medical Officer of Health;

AND

Public Analyst.

St. Helens:

F. HODGSON, PRINTER AND STATIONER, OLD MARKET PLACE.

1897.

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HEALTH COMMITTEE

OF THE

ST. HELENS CORPORATION.

NOVEMBER, 1896.

The Right Worshipful the Mayor (Alderman R. Pilkington, J.P.)
Councillor J. FORSTER, J.P., Chairman.
,, J. MASSEY, Deputy-Chairman.
Alderman D. GAMBLE, C.B., J.P.
,, J. C. GAMBLE, J.P.
,, D. McKECHNIE, J.P.
,, A. SINCLAIR, J.P.
Councillor H. B. BATES, L.S.A.
,, J. BURCHALL, J.P.
,, F. A. BURT.
,, J. FISHER.
,, J. GREEN.
,, J. POVEY.

HOSPITALS SUB-COMMITTEE:

The Right Worshipful the Mayor.
Councillor H. B. BATES, L.S.A.
,, F. A. BURT.
,, J. FORSTER, J.P.
,, J. MASSEY.

SANITARY SUB-COMMITTEE:

The Right Worshipful the Mayor.
Alderman J. C. Gamble, J.P.
Councillor H. B. BATES, L.S.A.
,, J. BURCHALL, J.P.
,, F. A. BURT.
,, J. FORSTER, J.P.
J. GREEN.
J. MASSEY.

STATISTICAL SUMMARY FOR 1896.

POPULATION—Estimated to the Middle of the year—				
	Males ... 42,341	Total ...		81,136
	Females ... 38,795			
Natural increase during the year				1,399

MARRIAGES				536
Annual Rate of Persons Married per 1000 of the Population...				6·60

BIRTHS...	Males ... 1,532	Total ...		3,042
	Females ... 1,510			
Annual Rate of Births per 1000 of Population				37·49
Mean „ „ during years 1886 to 1895				39·2

DEATHS...	Males ... 883	Total ...		1,643
	Females ... 760			
Annual Rate of Mortality per 1000	Males ... 20·8	Total ...		20·24
	Females 19·5			
Mean Rate during years 1886 to 1895				22·20

Total Deaths from Zymotic Diseases	295
Annual Rate of Mortality from Zymotic Diseases	3·63
Mean Rate of Mortality from Zymotic Diseases for years 1886 to 1895	3·78

Infantile Mortality Rate, 1896	177
Mean Rate for years 1886 to 1895	169·8

MEDICAL OFFICER OF HEALTH'S DEPARTMENT,

TOWN HALL,

ST. HELENS,

April 2nd, 1897.

To the Chairman and Members of

The Health Committee,

Corporation of St. Helens.

GENTLEMEN,—

I have the honour to present to you the 24th Annual Report on the Health of the Borough of St. Helens, being the Seventh Report issued since my connection with the Health Department.

This Report deals with various Statistics relating to the Public Health, and with the work done by the Health Department during the year ending December 31st, 1896.

The Death Rate for 1896, was 1·05 per 1000 below that of the preceding year, and 1·96 per 1000 below that of the average of the preceding 10 years.

When the Age and Sex Distribution of the Population of St. Helens are taken into consideration, the Death Rate for St. Helens during 1896 compares favourably with that in other manufacturing centres.

I would specially direct your attention to the parts of the Report dealing with Scarlet Fever and Typhoid Fever, as to each disease more than usual time was devoted to its prevention during 1896.

I have to thank your Committee for the way in which they have supported my action during the year, and also the individual members for kindly advice and help given me in cases where I have been in doubt.

My thanks are also due to the Medical Practitioners in St. Helens for their assistance in reporting to me, when interference was necessary, and in so loyally supporting our efforts to improve generally the healthfulness of the town.

In conclusion, I have to report that the various Officials connected with my department have carried out their work in an energetic and conscientious manner.

I am, Gentlemen,

Your obedient Servant,

JOHN ROBERTSON.

POPULATION.

The population of St. Helens at the middle of 1896 (June 30th) is estimated to have been 81,136 persons. Of this number 42,341 were males and 38,795 females.

In so actively growing a population as there is in St. Helens there is always a probability of error to some extent in estimating the number of its inhabitants, even when done by the most reliable known methods. In such a town the necessity for a Quinquennial Census is much more apparent than in rural districts. Every year, therefore, up to 1901, when the next Census will be taken, will increase the chances of error in estimating the population, and as a necessary consequence will cause more or less fallacious mortality and other statistics.

The method adopted in arriving at the above figures is that used by the Registrar-General, and is based on the assumption that the same rate of increase will occur between 1891 and 1901 as occurred between 1881 and 1891—*i.e.*,

Population	1881	... ...	58,308* (April)
,,	1891	... ...	72,413* (April)
,,	1896	.. ...	81,136* (June)

* Population within the enlarged Borough Area.

From a knowledge of the number of new houses erected, and from the continuance of the high birth rate, it may be safely inferred that the error in the above estimate is not a large one.

CAUSES OF INCREASE OF POPULATION.

The following figures show the various increases which have been registered as occuring in St. Helens during the past 14 years. -—

Year.	Natural Increase.	Estimated Increase.	Increase due to Immigration.
1883	1152	1291	139
1884	1203	1321	118
1885	1062	1348	286
1886	1193	1379	186
1887	1030	1407	337
1888	1322	1440	118
1889	1236	1470	234
1890	1032	1504	472
1891	1094	1535	440
1892	1408	1574	166
1893	1236	1600*	364
1894	1482	1660	178
1895	1476	1710	234
1896	1399	1735	336

* This number does not include the increase which took place in the new area during 1893.

A natural increase of 1,399 in our population of 81,136 is at the rate of 17·2 per 1000 per annum, against 18·5 in 1895.

In England and Wales during 1896 the natural increase was at the rate of 12·6 per 1000.

INHABITED HOUSES.

The number of Inhabited Houses in St. Helens was as follows :—

1881*	...	...	...	10,165
1891*	...	...	...	12,536
1896	...	...	...	**13,913**

* Estimated from Census Returns.

The above figures indicate that on an average during the 16 years 1881 to 1896 there have been 249 inhabited houses added per annum. On referring to Appendix A it will be seen that the Borough Surveyor certified 244 new houses as fit for occupation during the year.

The above figures give the following number of persons per house—

1881	...	...	5·73 persons per house.
1891	...	...	5·77 ,, ,,
1896	...	...	**5·8** ,, ,,

At the Census in 1891 there were 5·3 persons per house in England and Wales. In Liverpool 5·6 persons per house; in Wigan 5·5; in Warrington 5·4.

DISTRIBUTION OF THE POPULATION.

In the accompanying Table are given the Statistics relating to the Distribution and density of the Population.

WARDS.	Population, Census 1891.	Population estimated to June 30, 1896	Area of each Ward, 1895.			Persons per Acre in 1896.
			Acres.	Ro.	Poles.	
Eccleston, North ...	8555	9579	234	2	30	40·9
Eccleston, South ...	6797	8187	617	3	32	13·2
Central	8219	8321	98	0	27	84·9
Windle, North ...	7481	9152	681	1	22	13·4
Windle, South ...	8438	8699	68	3	11	127·9
Hardshaw	9225	10056	341	0	0	29·4
Sutton East	8250	9074	1300	2	18	6·9
Sutton, West ...	7418	8797	2424	1	22	3·6
Parr	8030	9270	1475	0	0	6·2
Whole Borough ...	72413	81135	7248	0	2	11·1

AGE DISTRIBUTION, 1896.

AGES.	CENSUS 1891, Old Borough Area.	Estimated Population at each Age in the Extended Borough, 1896.
Under 1 year	2398	2734
1 to 2 years	2143	2444
2 „ 3 „	2140	2441
3 „ 4 „	2068	2358
4 „ 5 „	1967	2244
Total under 5 years	10716	12221
5 to 10 years...	9221	10493
10 „ 15 „	8334	9484
15 „ 20 „	7441	8470
20 „ 25 „	6582	7480
25 „ 30 „	6023	6853
30 „ 35 „	5129	5834
35 „ 40 „	4465	5079
40 „ 45 „	3674	4181
45 „ 50 „	2685	3054
50 „ 55 „	2434	2769
55 „ 60 „	1620	1843
60 „ 65 „	1407	1601
65 „ 70 „	763	868
70 „ 75 „	461	525
75 „ 80 „	227	260
80 „ 85 „	83	94
85 „ 90 „	19	22
90 „ 95 „	4	4
95 „ 100 „	—	—
	71288	81135

BIRTHS.

The number of Births registered during 1896 was 3,042. This number is 123 below the number registered in 1895.

In the following Table will be found the number of births registered during the years 1886 to 1896, and the Birth Rate in each year.

YEAR.		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Totals	Rate per 1000 per year
1886		721	651	671	595	2638	40·7
1887		651	617	584	604	2456	37·0
1888		694	668	601	689	2652	39·2
1889		723	748	624	679	2774	39·8
1890		754	678	645	699	2776	38·9
1891		767	684	750	719	2920	40·7
1892		695	769	719	730	2913	39·7
1893		775	747	776	731	3029	40·1
1894		781	716	653	732	2882	37·0
1895		884	796	775	710	3165	39 8
Mean of 10 years ...		744	707	679	688	2820	39·2
1896	Males ...	402	394	356	380	1532	37·49
	Females.	375	384	358	388	1510	
	Total ..	777	783	714	768	3042	
	Rate per 1000 ...	38·3	38·6	35·2	37·8		

In England and Wales the Birth rate during 1896 was 29·7 per 1000 of the population, which is the lowest yearly Birth rate on record, except that for 1894. The rate for 1896 in England and Wales was 1·3 per 1000 below that for the previous ten years.

Year.	Birth Rates	
	England and Wales.	St. Helens.
1886	32·8	40·7
1887	31·9	37·0
1888	31·2	39·2
1889	31·1	39·8
1890	30·2	38·9
1891	31 4	40·7
1892	30·5	39·7
1893	30·8	40·1
1894	29·6	37·0
1895	30·3	39·8
1896	**29·7**	**37·4**
Mean	30·86	39·11

It will be observed, too, that during 1896, as in the preceding years, the highest birth rates were registered during the 1st and 2nd quarters.

Of the 3,042 children born during 1896, 1,532 were males, and 1,510 were females, this being in the proportion of 100 males to 98·5 females. At the Census of 1891 there were 100 males to every 91·7 females in St. Helens, whereas in England and Wales at the same period there were 100 males to every 106·4 females.

On Table E will be found the birth rates for each of the 33 great towns in England and Wales, and it will be noticed that in not one of these towns was the birth rate so high as that in St. Helens. Only one of these towns had a rate over 35 per 1000 in 1896.

On Table F will be found similar statistics relative to the smaller towns, and it will be seen that Warrington and Ystradyfodwg are the only towns having as high or higher rates than St. Helens.

On account of the large number of young infants added to the population of St. Helens every year in excess of what is added in other towns, it is essential that our high birth rate should be constantly kept in mind when our mortality and other rates are being compared with those for other towns.

ILLEGITIMACY.

St. Helens has always had a comparatively low rate of illegitimacy, so low indeed that probably it does not influence the mortality statistics to any appreciable degree as it does in some other Districts.

Of the 3,042 births during 1896, 84 were illegitimate. This is in the proportion of 972·3 legitimate births and 27·6 illegitimate births in every 1000.

Year.	Legitimate.	Illegitimate.
1886	974	26
1887	971	29
1888	970	30
1889	975	25
1890	976	24
1891	974	26
1892	981	19
1893	974	26
1894	968·5	31·5
1895	975·0	24·9
1896	**972·3**	**27·6**

The above figures do not include the births which occurred in Whiston Workhouse.

It is satisfactory to know that the statistics for St. Helens regarding illegitimacy compare favourably with those of any other town in England, and are below the figures for the whole of England considerably.

MORTALITY RATE.

The deaths of 1,668 persons took place during 1896 within the Borough of St. Helens. The number is equal to a (uncorrected) death rate of 20·43 per 1000 of the population.

All the statistics regarding ages, distribution, and causes of death to be found in this Report are based upon the 1,668 deaths which occurred within the Borough Boundary during 1896.

For comparative purposes certain corrections have to be applied as follows :—

I. To be deducted—	MALES.	FEMALES.	TOTAL.
(*a*) Deaths in Rainhill Asylum (Main Building)	73 ...	34 ...	107
(*b* Deaths of Haydock patients at the Isolation Hospitals	0 ...	1 ...	1
(*c*) Deaths of patients at the Cottage Hospital who were admitted from Districts outside the Borough ...	2 ...	0 ...	2
(*d*) Deaths at the Providence Hospital under similar conditions... ...	0 ...	0 ...	0
Totals ...	75 ..	35 ...	110

II. To be added—	MALES.		FEMALES.		TOTAL.
(*a*) Deaths of St. Helens patients in Whiston Workhouse Infirmary...	48	...	32	...	80
(*b*) Deaths at Old Wint, Small-Pox Hospital of patients from St. Helens	0	...	0	...	0
(*c*) Deaths at Rainhill Asylumn of patients from St. Helens ...	3	...	2	..	5
Totals ...	51	...	34	...	85

The corrected number of deaths is therefore 1,643. In the four Quarterly Reports of the Registrar General, St. Helens is debited with 1,651 deaths. The 8 deaths which are not accounted for in the above figures are deaths which occurred in other institutions outside of St. Helens, or accident cases of which the Health Committee has no knowledge.

The Death rate for St. Helens, with these corrections, was therefore **20·24** per 1000 of the population. This number is **1·05** per 1000 below the rate in the preceding year—*i.e.*, 1895, 21·29.

The Death rate for 1896 is however below that of the preceding 10 years by 1·96 per 1000 of the population.

The saving of life which this reduction in the Death rate of 1·96 per 1000 indicates amounts to over 150 lives, with a corresponding saving in sickness.

On page 18 will be found the recorded death rates for St. Helens during 27 years, and it will be noticed that on only three occasions was the yearly mortality rate lower than it was in 1896.

In England and Wales the death rate during 1896 was at the rate of 17·1 per 1000 of the population, and this was no less than 1·7 per 1000 below the mean rate for the 10 years 1886 to 1895.

In Tables E and F (pages 19 and 20) will be found the Mortality Statistics in other towns. In comparing these with St. Helens Statistics, the social conditions,—the age and the sex distribution,—and the nature of the staple industries in each town should be taken into consideration.

The Death rates in each Quarter of the past five years is seen below:—

	1892	1893	1894	1895	1896
1st Quarter ...	23·6	24·8	17·5	19·5	19·6
2nd ,, ...	18·8	12·7	16·8	19·3	19·8
3rd ,, ...	19·6	26·8	17.4	22·9	19·9
4th ,, ...	19·6	19·5	20·2	22·4	22·8

The Death rates in the various Wards are shown below:—

WARDS.	Death Rate 1892.	Death Rate 1893.	Death Rate 1894.	Death Rate 1895.	Death Rate 1896.
Eccleston, North ...	20·1	24·5	19·0	22·1	19·5
Eccleston, South ...	15·3	16·8	12·5	11·7	14·5
Central	19·9	24·5	14·4	19·2	20·4
Windle, North	16·5	19·7	14·1	18·4	18·9
Windle, South	21·6	20·6	15·5	16·4	18·5
Hardshaw‡	21·7 ‡	31·0 ‡	27·5 ‡	21·9 ‡	20·7 ‡
Sutton, East†	15·6 †	20·1 †	15 2 †	17·1 †	16·9 †
Sutton, West*	27·8 *	39·0 *	26·8 *	36·4 *	31·8 *
Parr	22·2	22·7	16 6	22·3	23·1

* Including Deaths in Rainhill Asylum (main building) and in the Fever Hospital.
† Do. do. The Cottage Hospital.
‡ Do. do. The Providence Hospital.

The Death rate of Males and Females during the past four years is given below:—

	Males.	Females.	Total.
1893 ...	24·4	22·3	23·7
1894 ...	17·8	18·1	18·0
1895 ...	22·0	20·0	21·0
1896 ..	20·8	19·5	20·2

MORTALITY AT VARIOUS AGES.

In the following Table will be seen the Death rates at each age group during the years 1893-96; also the mean rate at each age.

AGES.	Death Rate per 1000 of the Population at each Age Group				
	1893	1894	1895	1896	Means
Under 1 year ...	233·1	178·4	215·4	197·8	206·1
1 to 2 years ...	98·2	59·5	79·5	69·5	76·6
2 „ 3 „ ...	32·0	17·5	20·5	29·0	24·7
3 „ 4 „ ...	15·1	10·6	9·5	20·7	13·9
4 „ 5 „ ...	12·2	9·7	9·1	10·2	10·3
5 „ 10 „ ...	5·3	4·7	5·4	6·0	5·3
10 „ 15 „ ...	4·7	2·9	3·8	2·7	3·5
15 „ 20 „ ..	4·2	3·6	4·5	3 4	3·9
20 „ 25 „ ...	6·9	6·5	5 5	5 8	6·1
25 „ 35 „ ...	9·1	7·2	8·2	8·2	8·1
35 „ 45 „ ..	12·6	11·6	14·4	14·5	13·2
45 „ 55 „ ...	23·6	20·4	21 4	21·1	21·6
55 „ 65 „	51·9	35·4	35·0	38 0	40·0
65 „ 75 „ ..	75·4	71·2	79·2	74·6	75·1
75 „ 85 „ ..	95·3	112·7	167·6	138·4	128·5
Upwards of 85 years...	400·0	80·0	280·0	192·3	238·0
All under 5 years ...	83·7	59·2	71·7	69·8	71·1
All over 5 years ...	13·0	10·7	12·1	11·8	11·9
All ages	23·4	18·0	21·0	20·4	20·7

The causes producing the high mortality rates among young infants were indicated in the Annual Report for 1895.

The causes of death at each age group and in each Ward are set out in Table D at the end of this Report.

INFANTILE MORTALITY RATE.

This rate shows the number of deaths of children under one year of age per 1000 births. In 1896 it was **177** as against 181 in the preceding year, and a mean rate of 169·8 in the preceding 10 years.

In England and Wales it was 148 in 1896.

YEAR.	INFANT MORTALITY RATE.	
	England and Wales.	St. Helens.
1885	138	168
1886	149	172
1887	145	163
1888	136	151
1889	144	177
1890	151	170
1891	149	180
1892	147	147
1893	159	196
1894	137	161
1895	161	181
1896	**148**	**177**

In Tables E and F the rates in other towns are indicated.

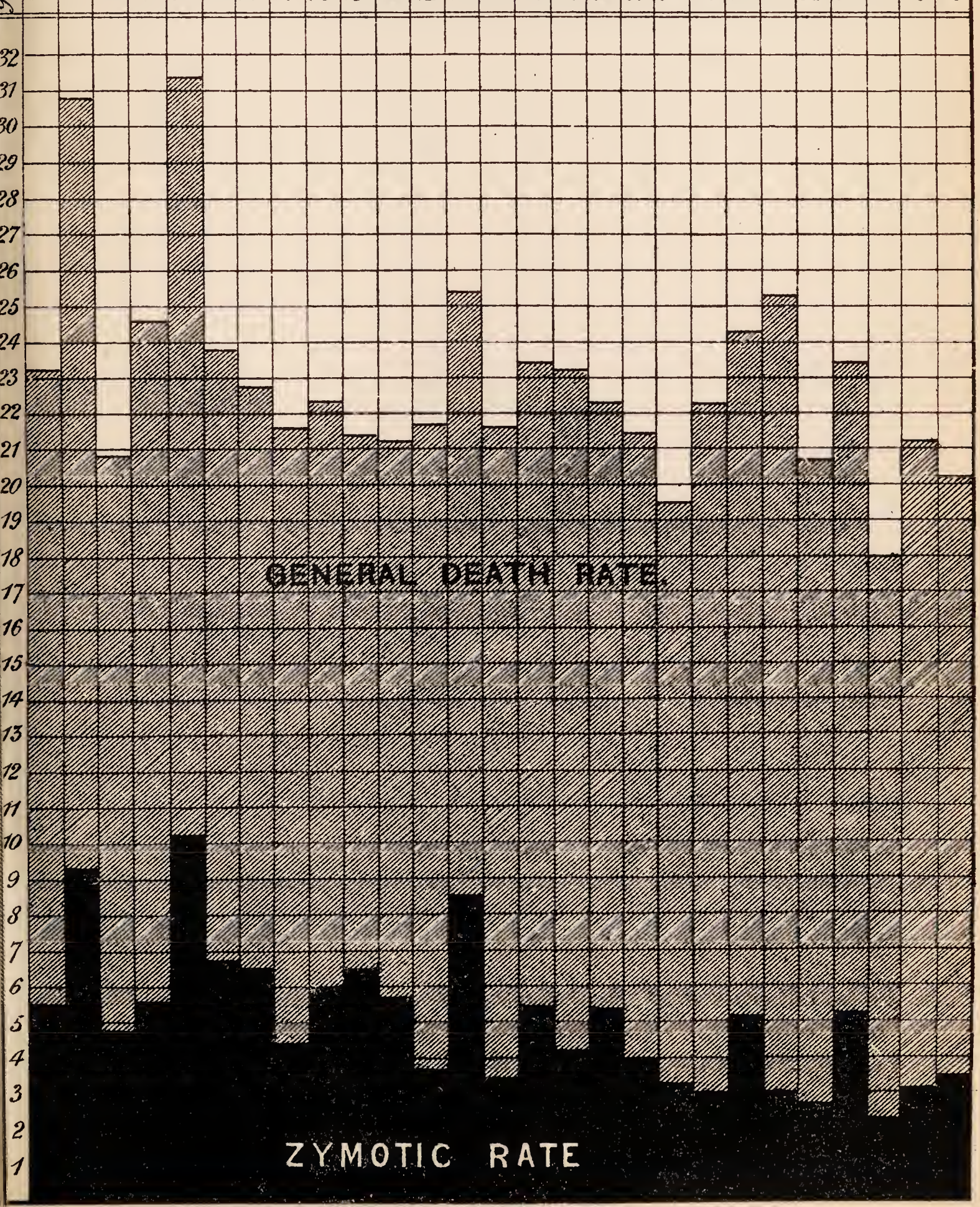
TABLE SHOWING THE VITAL AND MORTAL STATISTICS FOR ST. HELENS DURING 27 YEARS.

YEARS.	Population.	Birth Rate.	Death Rate.	Zymotic Death Rate.	DEATHS FROM							
					Small Pox.	Measles.	Scarlet Fever.	Typhoid and Continued Fever.	Typhus Fever.	Diarrhœa.	Whooping Cough.	Diphtheria.
1870	44320	..	23·46	5·5	0	0	56	23	8	97	37	5
1871	45400	..	27·79	9·4	..	..	..	28	..	..	..	..
1872	46510	..	20·46	4·9	65	14	6	24	3	65	16	3
1873	47630	46·65	23·63	5·03	4	19	92	24	2	79	9	15
1874	48790	46·30	31·43	9·2	0	29	231	25	1	110	41	14
1875	49970	45·42	24·69	5·3	0	4	77	65	1	101	31	10
1876	51190	45·60	23·28	5·1	0	102	21	40	1	86	7	15
1877	52430	44·33	22·84	3·2	0	2	12	34	1	74	48	11
1878	53700	46·21	23·99	4·2	0	4	22	40	0	132	15	20
1879	55010	41·13	22·40	5·7	0	143	83	34	2	52	2	3
1880	56340	41·56	20·05	4·6	0	0	27	40	2	130	71	1
1881	57711	43·52	21·69	2·92	0	14	28	56	0	76	3	3
1882	58972	43·70	25·46	7·4	0	250	36	33	1	85	36	6
1883	60263	40·69	21·65	2·5	0	3	14	31	1	69	24	11
1884	61584	42·50	24 16	5·3	0	131	16	33	2	131	9	11
1885	62932	39 93	23·32	3·5	0	81	13	7	1	56	53	11
1886	64311	40·70	22·46	5·2	0	102	34	28	0	122	41	10
1887	65718	37·00	21·69	3·9	0	53	35	34	0	101	28	11
1888	67158	39·20	19·80	3·1	0	38	11	22	0	65	61	21
1889	68628	39 86	23·50	4·18	0	78	3	81	1	85	1	29
1890	70132	38·90	25·43	5·3	0	19	181	24	1	74	68	13
1891	71666	40 70	26·02	3·0	0	54	24	26	0	78	29	9
1892	73240	39·77	20·55	2·64	1	23	18	25	0	84	31	12
1893	*75390	40·10	23·46	5·3	5	135	6	52	0	168	19	16
1894	*77690	37·09	18 02	2·21	0	21	14	26	2	38	61	10
1895	*79400	39·8	21·08	3·08	1	54	9	59	0	101	14	8
1896	***81136**	**37·49**	**20·24**	**3·63**	**0**	**38**	**59**	**40**	**0**	**63**	**78**	**17**

* These figures include Population in Area added 1893, [illegible]

CHART No. 1.

years	RATE	in Inches	TEMP AIR	TEMP SHADE	ZYMOTICS
18 70	44·32	27·5	48·1	70·5	
71	45·40	25·0	46·9	72·8	Diarrhœa Small Pox
72	46·51	44·3	49·3	71·4	
73	46·65	24·9	48·2	89·1	
74	46·30	27·8	48·6	82·3	Scarlet Fever.
75	45·42	30·1	48·4	78·0	
76	45·60	36·3	48·4	84·8	
77	44·33	41·7	48·3	79·0	
78	43·21	35·5	48·5	85·0	Diarrhœa
79	41·13	24·3	45·5	75·9	Measles
18 80	41·56	29·7	48·2	82·4	
81	43·52	36·7	46·9	84·2	
82	43·70	39·7	48·5	71·4	Measles
83	40·69	34·8	48·0	74·9	
84	42·50	26·9	49·2	84·9	Measles Diarrhœa
85	39·93	32·7	46·9	76·6	
86	40·70	33·0	47·3	77·1	Diarrhœa
87	37·00	21·1	47·0	82·9	
88	39·20	28·1	46·7	82·3	
89	39·86	25·8	47·8	78·0	Typhoid Fever.
18 90	38·90	27·0	47·8	76·6	Scarlet Fever.
91	40·70	32·3	47·2	78·9	
92	39·77	34·8	46·6	78·9	Diarrhœa
93	40·10	25·7	50·1	75·0	Measles Diarrhœa.
94	37·09	33·3	48·9	81·0	
95	39·80	28·0	47·2	80·2	
96	37·49	30·0	48·5	84·2	Scarlet Fever.



FOR 27 YEARS.

TABLE E.

TABLE COMPILED FROM THE REGISTRAR GENERAL'S QUARTERLY REPORTS IN ORDER TO SHOW THE COMPARATIVE MORTALITY OF ST. HELENS WITH 33 OTHER LARGE ENGLISH TOWNS IN 1896.

TOWN.	Population	Birth Rate per 1000	Death Rate per 1000	Infantile Rate per 1000 Births	Zymotic Rate per 100
33 Towns	10,846,971	30·7	18·9	168	2·88
London	4,421,955	30·1	18·5	162	3·16
West Ham	261.297	32·6	16·1	167	3 02
Croydon	118,006	25·0	14·2	150	1·95
Brighton	120,499	24·6	16 1	136	1·63
Portsmouth	178,639	27·5	16 5	156	2·13
Plymouth	90,276	28·8	19 5	178	2·26
Bristol	230,623	27·6	16·9	143	1·90
Cardiff	162,690	33·7	16·8	165	2·28
Swansea	98,645	30·5	16·8	160	1·16
Wolverhampton ..	86,530	34·3	19·9	184	3·14
Birmingham	501,241	32·5	20·8	198	3·61
Norwich	108,630	30.7	17·3	165	2·35
Leicester	198,659	30·7	16·7	188	2 99
Nottingham	229,775	28·9	17·4	168	2·44
Derby	101,770	28·0	15·6	151	1·92
Birkenhead	109,343	31·7	19·1	177	2 98
Liverpool	632,512	34·8	22·7	173	3·02
Bolton	120,380	31·3	20·7	169	2 84
Manchester	529,561	33·0	22·6	176	3 43
Salford	210,707	34 9	22·6	200	4·14
Oldham	143,442	27 2	20·2	183	2·94
Burnley	102,805	31·0	17·5	169	2·20
Blackburn	129,459	27·7	17·8	170	1·80
Preston	113,864	32·6	20·7	204	1·89
Huddersfield	100,463	20·5	16·4	166	1·60
Halifax	94,775	24·2	17·3	148	1·09
Bradford	228,809	25·5	16·5	143	1·58
Leeds	402,449	30·7	18·7	169	2·31
Sheffield	347,278	34·0	19·2	173	2 92
Hull	220,844	31·9	18·8	174	3·32
Sunderland	140,386	34·1	19·8	158	3·03
Gateshead	98,436	35·8	19·0	171	3·09
Newcastle	212,223	31·0	18·4	165	2·09
St. Helens	**81,136**	**37·49**	**20·24**	**177**	**3·63**

TABLE F.

TABLE SHOWING COMPARATIVE STATISTICS BETWEEN ST. HELENS AND OTHER SMALLER TOWNS DURING 1896.

TOWN.	Population.	Birth Rate per 1,000.	Death Rate per 1,000.	Infantile Death Rate per 1,000 Births.	Zymotic Rate per 1,000.
Southampton	98,002	30·2	18·0	146	2·0
Reading	66,739	27·4	13·6	122·2	1·68
Northampton	65,586	27·4	14·9	150·6	2·5
Hanley	58,755	35·6	21·8	213	3·9
Burton-on-Trent	50,056	30·2	17·08	134·92	4·81
Walsall	79,195	34·4	17·8	168	2·4
West Bromwich	63,000	37·1	19·8	189	2·6
Dudley	45,460	38·2	22·6	174	3·8
Aston Manor	76,702	31·5	15·4	172	3·5
Coventry	58,000	29·1	16·5	149	1·8
Grimsby	59,428	32·4	15·6	141	2·0
Stockport	76,559	31·09	20·6	189	2·9
Bootle	52,000	33·8	20·13	184	3·25
Wigan	58,930	35·94	23·09	186	4·09
Warrington	60,106	37·5	18·6	163	3·0
Bury	58,559	24·2	19·81	176	1·9
Ashton-under-Lyne	42,369	29·2	21·4	169·6	2·1
Rochdale	72,761	25·49	19·08	151	2·1
Accrington	42,000	27·1	15·54	171·4	1·78
Darwen	36,652	28·1	17·1	181	2·2
Barrow-in-Furness	53,568	29·02	13·49	141	1·45
York	70,842	30·8	18·1	125	2·7
Middlesborough	88,267	31·0	18·8	170	2·7
South Shields	92,773	33·8	17·5	165	2·27
Carlisle	41,300	30·1	18·2	137	·7
Ystradyfodwg	111,974	38·9	19·0	195	2·8
St. Helens	**81,136**	**37·49**	**20·24**	**177**	**3·63**

TABLE H.

WEEKLY RETURNS OF BIRTHS AND DEATHS FOR 1896.

1896.		Deaths from all causes.	Annual Rate per 1000.	Deaths from seven principal Zymotics.	Annual Rate per 1000, for Zymotics.	Births.	Annual Rate per 1000, Births.
						(7 days)	
Week ending January (4 days)	4	16	10·2	1	·64	75	48·0
,, ,,	11	28	17·9	1	·64	60	38·4
,, ,,	18	35	16·4	5	3·2	63	40·3
,, ,,	25	30	19·2	3	1·9	67	42·8
,, February	1	24	15·3	2	1·2	58	37·1
,, ,.	8	29	18·5	4	2·5	66	42·2
,, ,,	15	36	23·0	6	3·8	53	33·9
,, ,,	92	35	22·4	3	1·9	55	35·2
,, ,,	29	37	23·6	4	2·5	53	33·9
,, March	7	25	16·0	2	1·2	61	39·0
,, ,,	14	32	20·4	6	3·8	60	38·4
,, ,,	21	23	14·7	6	3·8	50	32·0
,, ,,	28	48	30·7	8	5·1	56	35·8
,, April	4	28	17·9	5	3·2	67	42·8
,, ,,	11	42	26·8	9	5·7	54	34·5
,, ,,	18	39	24·9	8	5·1	68	43·5
,, ,,	25	39	24·9	8	5·1	57	36·4
,, May	2	24	15·3	10	6·4	74	47·3
,, ,,	9	36	23·0	3	1·9	60	38·4
,, ,,	16	27	17·2	5	3·2	64	40·9
,, ,,	23	31	19·8	7	4·4	63	40·3
,, ,,	30	31	19·8	6	3·8	42	26·8
,, June	6	24	15·3	3	1·9	64	40·9
,, ,,	13	25	16·0	7	4·4	53	33·9
,, ,,	20	29	18·5	4	2·5	66	42·2
,, ,,	27	28	17·9	10	6·4	51	32·6
,, July	4	27	17·2	10	6·4	56	35·8
,, ,,	11	41	26·2	7	4·4	59	37·7
,, ,,	18	27	17·2	11	7·0	62	39·6
,, ,,	25	49	31·3	14	8·9	41	26·2
,, August	1	33	21·2	8	5·1	62	39·6
,, ,,	8	28	17·9	8	5·1	61	39·0
,, ,,	15	29	18·5	6	3·8	63	40·3
,, ,,	22	35	22·4	9	5·7	58	37·1
,, ,,	29	26	16·6	7	4·4	40	25·6
,, September	5	27	17·2	2	1·2	49	31·3
,, ,,	12	23	14·7	2	1·2	58	37·1
,, ,,	19	31	19·8	5	3·2	57	36·4
,, ,,	26	28	17·9	5	3·2	48	30·7
,, October	3	21	13·4	3	1·9	63	40·3
,, ,,	10	35	22·4	6	3·8	55	35·2
,, ,,	17	31	19·8	8	5·1	57	36·4
,, ,,	24	32	20·4	6	3·8	61	39·0
,, ,,	31	38	24·3	3	1·9	46	29·4
,, November	7	27	17·2	5	3·2	65	41·6
,, ,,	14	39	24·9	4	2·5	69	44·1
,, ,,	21	38	24·3	6	3·8	55	35·2
,, ,,	28	37	17·2	3	1·9	45	28·8
,, December	5	38	24·3	4	2·5	75	48·0
,, ,,	12	34	21·7	3	1·9	50	32·0
,, ,,	19	24	15·3	3	1·9	74	47·3
,, ,, (12 days)	31	69	44·1	11	7·0	53 (7 days)	33·9

CAUSES OF DEATH.

THE ZYMOTIC DISEASES.

The mortality from the seven principal Zymotic Diseases, *i.e.*, Small Pox, Measles, Scarlet Fever, Diphtheria, Whooping Cough, Fever (including Typhus, Typhoid, and Continued), and Diarrhœa was at the rate of **3·63** per 1000 per annum during 1896.

In England and Wales the rate of mortality for this Group was 2·18 per 1000 per annum during 1896.

It will be noted that the rate of mortality for Zymotic Diseases was higher in St. Helens during 1896 than during the preceding year.

The rate for 1896 compares favourably with that for the preceding 10 years—which was 3·78 per 1000.

The following Table shows the yearly rate from Zymotic Diseases during each of the past 26 years, and also the rate for each quinquennial period. It will be seen that there is a gradual diminution taking place in the number of deaths from this group of eminently preventable Diseases.

Year.	Rate.	Year.	Rate	Year	Rate.	Year.	Rate.	Year.	Rate.
1871	9·4	1876	5·1	1881	2·92	1886	5·2	1891	3·0
1872	4·9	1877	3·2	1882	7·4	1887	3·9	1892	2·64
1873	5·03	1878	4·2	1883	2·5	1888	3·1	1893	5·3
1874	9·2	1879	5·7	1884	5·3	1889	4·18	1894	2·21
1875	5·3	1880	4·6	1885	3·5	1890	5·3	1895	3·08
Mean	6·76		4·56		4·32		4·33		3·24

1896 ... ... 3·63

In Tables E and F will be found the Zymotic rates for 1896 of other towns.

The Zymotic Rate of 3·63 during 1896 was made up as follows:—

Small Pox	...	...	0·00
Measles	...	...	0·46
Scarlet Fever	...	...	0·72
Diphtheria	...	...	0·20
Whooping Cough	...	...	0·49
"Fever"	...	...	0·96
Diarrhœa	...	...	0·77
Total	...	...	3·63

The relative prevalence of the Diseases in this Group in 1896, compared with that during the 24 years—1872-1895—is set out in the following Table.

Disease.	Per cent. of Zymotic Deaths.	
	24 Years, 1872-1895.	1896
Small Pox	1·17	0·00
Measles	20·83	12·88
Scarlet Fever	15·58	20·00
Diphtheria	4·20	5·76
Fever	13·62	13·55
Whooping Cough ..	11·27	26·44
Diarrhœa...	33·29	21·35
	100%	100%

It will be observed from the above that the relative proportion of deaths from Whooping Cough was greatly in excess of the mean; also, that Enteric Fever was about equal to the mean, and that Diarrhœa was considerably below.

Zymotic Rates during each of the 4 Quarters of the years 1891-1896.

	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.
1891 ...	2·5 ...	2·9 ...	3·2 ...	3·1
1892 ...	2·0 ...	1·2 ...	3·9 ...	2·4
1893 ...	6·4 ...	4·2 ...	10·3 ...	2·0
1894 ...	2·26 ...	1·39 ...	2·62 ...	2·57
1895 ...	2·00 ...	1·45 ...	6·06 ...	2·80
1896 ...	**2·51** ...	**4·19** ...	**4·63** ...	**3·20**

In Table D will be found certain details regarding the deaths from Zymotic Diseases as to Age Groups and Localites.

The following gives the number of deaths in each Ward during the 6 years 1891 to 1896.

WARDS.	Total Deaths from 7 Principal Zymotics in each year.						Persons per Acre.	Estimated Populati'n
	1891	1892	1893	1894	1895	**1896**		
Eccleston, North	32	24	55	20*	33*	**50***	40·9	9,579
Eccleston, South	12	13	34	16*	19*	**18***	13·2	8,187
Central	23	17	47	13	36	**36**	84·9	8,321
Windle, North	17	9	32	14*	20*	**25***	13·4	9,152
Windle, South	22	37	50	14	20	**32**	127·9	8,699
Hardshaw	31	23	40	35	19	**31**	29·4	10,056
Sutton, East	21	11	23	15	17	**25**	6·9	9,074
Sutton, West (†)	36	24	61	26	59	**32**	3·6	8,797
Parr	28	36	60	19	22	**46**	6·2	9,270
Totals.. ..	222	194	402	172	245	**295**	11·1	81,135

* Including Deaths in the Area added to these Wards in August, 1893.
(†) Including Deaths in Fever Hospital.

SMALL POX.

No case of this Disease was reported during 1896.

The cases of Small Pox which have occurred in recent years in St. Helens are set out in the following Table.

	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896
Cases of Sickness from Small Pox	0	0	5	0	1	0	23	40	2	10	0
No. of Deaths ...	0	0	0	0	0	0	1	5	1	1	0

St. Helens may be considered well equipped for dealing with any cases that may be imported in the future. It is a well vaccinated town, and the Special Small Pox Hospital is of ample size for any ordinary outbreak.

The year 1896 may be regarded as an "annus mirabilis" in regard to Small Pox as it was in August, 1896, that the long looked for Report of the Royal Commission on Vaccination was issued. Taken as a whole the report is eminently satisfactory. It recognises most fully the value of Compulsory Infant Vaccination as the most important means of preventing the spread of Small Pox. As a result of the Commissioners' Report it is not improbable that certain minor changes will in the near future be made in the existing Laws relating to Vaccination. These will in the main be improvements which the experience of half-a-century has taught us are desirable, but, unfortunately, there is also evidence in the Report that the present day system of mutual compromise when matters are in dispute will to some extent militate against the protective influence of Vaccination in the future.

I.—It is to be desired that Health Authorities, whose duty it is to prevent Disease, should carry out the Vaccination Acts rather than Poor Law Authorities as at present.

II.—In St. Helens and elsewhere it is found that the value of Infantile Vaccination is very much reduced by the number of inefficient Vaccinations that are performed every year. It is very important, therefore, in any new Act relating to this subject that a minimum of efficiency should be required, as it is at present by Public Vaccinators.

VACCINATION.

The following Table shows the Vaccination Returns for 10 years. It compares favourably with that of other towns.

YEARLY RETURNS ON VACCINATION FOR 10 YEARS IN ST. HELENS.

YEAR	1 Births.	2 Vaccinated.	3 Insusceptible	4 Dead.	5 Postpon'd	6 Removed	7 Unaccounted	Percentage not Vaccinated including Columns 5, 6, 7.
1886	*2616	2180	2	320	17	92	5	4·3
1887	*2559	2118	—	331	14	91	5	4·2
1888	*2660	2226	1	316	12	100	5	4·3
1889	*2774	2279	4	319	16	107	11	4·8
1890	*2669	2190	4	369	—	99	7	3·9
1891	*2827	2345	15	386	—	71	10	2·8
1892	*2817	2424	6	318	—	61	8	2·4
1893	*2856	2369	13	370	—	92	14	3·7
†1894	*2711	2279	10	309	2	97	14	4·0
†1895	*2943	2425	17	370	9	106	16	4·4

* The above Returns are for St. Helens Sub-District of the Prescot Union, which does not include quite the whole of the Borough.

† The Returns in Columns 5, 6, and 7, will still further be reduced for these years.

The above figures have been supplied by Mr. Welch, Vaccination Officer for St. Helens.

MEASLES.

Measles caused **38** Deaths during the year. Comparing this number with that in former years, we get as follows:—

		1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	Mean of 15 years
ST. HELENS	Tot. Deaths from Measles...	250	3	145	70	102	53	41	75	16	54	23	135	21	54	**38**	72
	Death Rate per 1000	4·10	·04	2·35	1·11	1·58	·80	·61	1·09	·22	·75	·31	1·8	·27	·68	**·46**	1·07
England & Wales Death Rate		·48	·34	·41	·52	·43	·59	·34	·50	·43	·43	·30	·36	·37	·37	**·55**	·42

The following Table shows the period during which Measles has been prevalent in each of the 15 years—1882 to 1896.

Year.	Jan.	Feb	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct	Nov.	Dec.	Total Deaths in each year.
1882	16	42	80	83	10	2	7	3	2	5	0	0	250
1883	0	0	0	0	0	1	1	0	0	0	1	0	3
1884	0	0	2	3	1	0	0	0	3	16	45	75	145
1885	36	10	10	3	2	5	2	1	0	0	0	1	70
1886	3	3	1	8	3	2	16	8	3	15	29	11	102
1887	4	2	6	6	2	1	1	4	1	6	10	10	53
1888	3	0	0	0	0	0	0	0	1	3	7	27	41
1889	10	13	8	11	5	11	3	3	1	7	2	1	75
1890	0	0	0	0	0	0	0	0	0	6	5	5	16
1891	4	3	3	14	11	6	3	0	2	3	5	0	54
1892	0	0	0	1	0	0	0	1	0	1	5	15	23
1893	31	31	31	28	5	4	2	1	2	0	0	0	135
1894	0	0	1	0	0	0	0	0	0	8	11	1	21
1895	3	10	5	3	2	11	9	6	1	1	3	0	54
1896	**1**	**3**	**11**	**10**	**2**	**1**	**4**	**2**	**0**	**2**	**1**	**1**	**38**
Totals...	111	117	158	170	43	44	48	29	16	73	124	147	1080

Measles is essentially a disease of childhood, and from the following Statistics it will be seen that in St. Helens (as indeed it is elsewhere) the mortality occurs mainly at ages below 3 years.

Ages at Death from Measles—1891 to 1896.

	1891	1892	1893	1894	1895	1896	Total.
0 to 3 months ...	0	1	1	1	0	**0**	3
3 „ 6 „ ...	2	0	5	0	1	**0**	8
6 „ 12 „ ...	8	4	32	6	8	**7**	65
1 „ 2 years ..	29	12	59	9	26	**14**	149
2 „ 3 „ ...	5	3	15	2	11	**11**	47
3 „ 4 „ ...	7	1	10	2	4	**3**	27
4 „ 5 „ ...	3	1	6	0	1	**3**	14
5 „ 10 „ ...	1	0	4	1	3	**0**	9
Over 10 „ ...	0	1	3	0	0	**0**	4
Total at all Ages ...	55	23	135	21	54	**38**	326

In St. Helens, Measles is not a notifiable disease. Information regarding its prevalence is mainly obtained (1) from the Sanitary Inspectors, (2) from the School Authorites, and (3) from the School Attendance Officers. The information is undoubtedly very incomplete. It has, however, enabled the Sanitary Authority to take certain action in the known cases, which has been most beneficial.

The action referred to was as follows:—

I.—Each house was visited and particulars obtained as to the source of infection; School attended, etc.

II.—Every child from infected houses was excluded from School Attendance, and, where there was clearly sufficient evidence, the School or part of it, was closed.

III.—Instructions were given in each case as to the necessity for isolation, and other methods for limiting the spread of infection.

By these means it was undoubtedly possible to prevent the spread of infection in a certain number of cases. But, by far the most important effect of these measures was that by insisting on isolation, many young children were kept indoors, and thus were prevented from catching cold during the attack of Measles. Experience has shown in the past in St. Helens that the mortality from Measles is mainly regulated by the climatic conditions during the epidemic. Recognising the good effect of Isolation it is probable, that if some fairly complete system of notification could be devised, that much could be done to limit the mortality from Measles even during epidemic periods.

The following Schools were closed during the year on account of the prevalence of Measles:—

Infants' School, Gerard's Bridge, from March 25th to April 20th.
Infants' Department, Windle Schools, from April 14th to May 4th.
Parr National Schools, from February 26th to March 16th.
Brookfield School, Park-road, from February 26th to March 23rd.

SCARLET FEVER.

This Disease was severely epidemic in St. Helens during 1896. 1,310 cases of the disease were notified, and 59 deaths were due to it.

Before looking at the causes of such a large outbreak and the information that has been obtained regarding preventive measures, it is well to look at the Statistics regarding Scarlet Fever.

On page 18 will be found the number of deaths from Scarlet Fever for each year since 1870. These figures, however, indicate very imperfectly the degree of prevalence of the disease, as it is evident in St. Helens that the degree of virulence of Scarlet Fever varies much from year to year.

The cases of Sickness and Death, together with the Death Rates from Scarlet Fever during each year since the Disease was Notifiable are set out in the following Table.

	1890	1891	1892	1893	1894	1895	**1896**
Cases of Sickness ...	1234	210	438	237	342	220	**1310**
No. of Deaths ...	181	24	18	6	14	9	**59**
Death Rate per 1000	2·52	·33	·24	·08	·18	·11	**·72**
Mortality per 100 Cases ...	14·6	11·4	4·1	2·5	4·0	4·0	**4·5**

AGE INCIDENCE.

The following Table shows the Ages at which the notified cases and deaths occurred.

SCARLET FEVER NOTIFICATIONS AND DEATHS AT VARIOUS AGES.

Ages	MONTHS. 0–3	3–6	6–9	9–12	YEARS. 1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–15	15–20	20 & over	
Total No. of Cases Notified ...	2	6	14	13	69	101	142	152	171	128	124	82	66	169	39	32	1310
	Under 1 year } 35								571								
Sickness Rate per 1000 of the Population at each age	Under 1 year } 12·8				28·2	41·3	60·2	67·7	54·4				17·8	4·6	·79		16·1
Deaths from Scarlet Fever at various ages	0	3	2	1	6	9	13	4	3	4	6	2	1	2	2	1	59
Percentage Mortality.	All under 1 year... } 17·1			7·6	8·6	8·9	9·1	2·6	1·7	3·1	4·8	2·4	1·5	1·1	5·1	3·1	4·5
	0	50	14·2														

It will be seen that the largest number of cases occurred in children between 2 and 8 years of age—no less than 61% of the total number of cases where at these ages. The maximum number occurred between 5 and 6 years of age. In Manchester the maximum number of attacks occurred at 3 to 4, and 4 to 5 among nearly 10,000 notified cases, 1891 to 1895.

In the same Table will be seen the Sickness rate at each Age Group per 1000 of the population living at each age.

In London the Sickness rate was—for 1891, 2·7; for 1892, 6·4; in 1893, 8·6; and in 1894, 4·2 per 1000 at all ages.

Comparing the Age Incidence in St. Helens with that in Manchester among nearly 10,000 cases during 1891 to 1895.

	St. Helens.	Manchester.
0 to 5 years	38·0%	35·9%
5 to 10 years ...	43·5%	40·0%
10 to 15 years ...	12·9%	14·8%
15 to 20 years ...	2·9%	4·7%
All over 20 years ...	2·4%	4·4%

SEASONAL INCIDENCE.

The following Table shows the periods of greatest prevalence of Scarlet Fever during the past 4 years in St. Helens.

Year.	January	February	March	April.	May.	June	July	August	September	October	November	December	Total
1893	33	33	16	23	12	3	10	13	7	21	31	35	237
1894	16	37	61	58	39	24	17	27	16	14	12	21	342
1895	7	12	19	19	18	19	8	19	12	12	39	38	222
1896	**32**	**53**	**38**	**41**	**80**	**87**	**78**	**105**	**126**	**249**	**220**	**201**	**1310**
Per centage 1893 to 1896	4·1	6·3	6·3	6·6	7·0	6·3	5·3	7·7	7.6	14·0	14·3	13·9	

During 1896, Scarlet Fever was most prevalent during October. The maximum weekly number notified was 75 during the week ending November 7th. In England and Wales, Scarlet Fever is most prevalent and most fatal during the last quarter of the year. Why this should be so is not easy of explanation.

DISTRIBUTION OF SICKNESS CASES.

Wards.	No. of Cases of Sickness from Scarlet Fever.						
	1890	1891	1892	1893	1894	1895	1896
Eccleston, North ...	209	48	58	32	29	12	231
Eccleston, South ...	73	14	28	35	29	19	214
Central	141	20	29	24	43	8	54
Windle, North ...	115	18	35	10	81	24	131
Windle, South ..	78	23	27	27	21	19	152
Hardshaw	186	25	43	17	46	45	163
Sutton, East	244	46	118	13	19	35	141
Sutton, West ...	105	9	48	35	35	25	103
Parr	83	7	52	44	39	35	121
Totals	1234	210	438	237	342	222	1310

It will be noted that North and South Eccleston had a larger number of cases than the other Wards.

TYPE OF THE DISEASE.

From the Table on page 27 it will be seen that the Epidemic of 1896 was not nearly so virulent as that in 1890. One case died in every 6·8 attacked in 1890, while 1 died in every 22·5 in 1896.

While the general type of the disease was a mild one, yet there occurred several cases of the most malignant type. Of the 59 children who died, no less than 26 were dead within 48 hours from the commencement of their illness. Many others died within a week of the onset of the disease.

In this respect it must always be remembered that Scarlet Fever is a disease which is frequently followed by Sequelæ which prove fatal long after all evidence of the Scarlet Fever attack has gone.

Also, that in many other cases the Sequelæ cause permanent damage to health.

From a practical point of view, one of the most important points to be kept in view is that Scarlet Fever in all epidemics is most fatal at early ages, and that, therefore, the older the child is before being attacked with Scarlet Fever the better are the chances of surviving.

In this respect the Registrar General, in his 49th Annual Report, says—

> "Now it is sometimes said that the separation from its family of a child, who is attacked by Scarlet Fever, is scarcely worth the trouble and expense it involves, seeing that the rest of the children, though they may escape on that special occasion, are almost certain to contract this very common disease at some future time, and may, therefore, as well, if not preferably, have it at once. The

results, however, to which our statistical inquiry has led us, are completely subversive of such a position. They show—independently of the plain fact that a very large proportion of persons go through life without ever contracting this disease—that the longer an attack is deferred, the less likely it is to occur at all; and not only so, but that, even supposing it to occur eventually, the less likely it is to end fatally."

NUMBER OF CASES PER HOUSE.

The 1,310 cases occurred in 883 houses.

In 621 houses, one case only occurred.
In 148 houses, two cases occurred.
In 80 houses, three cases occurred.
In 21 houses, four cases occurred.
In 9 houses, five cases occurred.
In 4 houses, more than five cases occurred.

In the 883 houses in which the 1,310 cases of Scarlet Fever occurred in 1896, there were 1,831 children under 12 years of age, who were said not to have had the disease previously, and who did not contract it during the year.

These figures are of some value because they confirm the experience gained in visiting cases of Scarlet Fever, namely, that in probably over 60 per cent. of the households attacked, reasonable care is taken to prevent diffusion of the infection, and, also, that a comparatively small number of unrecognised or uncared-for cases are capable of spreading the disease widely.

PRECAUTIONS ADOPTED TO PREVENT THE SPREAD OF SCARLET FEVER.

I.—For some years past every case of Scarlet Fever has been visited within a few hours of the receipt of the notification by the District Inspector. The object of his visit is twofold—1st, he is required to get exact information on certain points, and for this reason he fills up the following schedule:—

SCARLET FEVER.

.....Ward:— Notification Book No.....Page....

Name.....Age.....

Address .....

.....Family. .....Lodger.

Med. Atten..... First called in.....

Notified.....o'clock on the.....189....

Size of House.....living rooms.....bedrooms

Nature and Date of Isolation .....

Nursed by .....

Other Duties of Nurse.....

Patient removed to Hospital at.....o'clock,.....189....

Schoolmaster written—1st, on the.....of.....189....

,, ,, 2nd, ,, ...of.....189....

Milk and other Food Supply.....

Library Books.....

Business carried on in Premises.....

Nuisances requiring removal.....

Drains and Gullies.....

Age. M.	Age. F.	Occupation.	Place of Work or School.	*Scarlet Fever History.	Date of Rash.	Last at Work or School.
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....
....	....	.....	.....	.....	.....	.....

Remov. Hospl.

*A—Had Scarlet Fever. B—Not had Scarlet Fever. C—Now ill of Scarlet Fever.

Probable source of Infection.....

.....

.....

.....

.....

Disinfectants supplied.....

.....

Date of Fumigation.....No. of Rooms.....

Bedding, &c., sent for on the .....

TERMINATION OF CASE .... { Date of Recovery.....189....
Date of Death.....189....

CONFIRMATORY INSPECTION.. { Date of.....189....
Result.....

Dated.....o'clock, this.....day of.....189....

Signed.....Inspector

Whenever the information obtained in this way indicates, the Medical Officer of Health also visits the house.

II.—2nd. The visit of the District Inspector has for its main object the prevention of the spread of the disease, and for this purpose he is instructed to see the person who is responsible for the nursing of the patient, and to give general verbal instructions. In order that nothing might be overlooked the following printed instructions are then read over, and a copy left at the house.

COUNTY BOROUGH OF ST. HELENS.

MEDICAL OFFICER'S DEPARTMENT,
TOWN HALL,

RULES FOR PREVENTING THE SPREAD OF SCARLET FEVER.

1.—Scarlatina and Scarlet Fever are two names for the same disease.

2.—The danger of infection is the same in all cases, whether mild or severe. During the past six years about one out of every 10 children who suffered from Scarlet Fever were so severely affected that they died; while out of the remaining nine, one or two were more or less damaged for life.

3.—All this serious danger can be avoided, and the disease prevented from spreading, by adopting the following precautions for a period of *not less* than *six weeks* from the appearance of the rash, or until peeling has entirely ceased.

4.—**The patient must be isolated** at once in *one* room, into which *nobody* should enter except the "Doctor" and the "person nursing."

5.—Select for the sick room a room upstairs, and one, if possible, with a fire place.

6.—All needless articles, as carpets, hangings, contents of drawers and cupboards, and everything which is not to be used in the nursing of the patient, should be removed.

7.—No cups or dishes should be taken from the room, and no waste food should be eaten by any other person than the patient.

8.—Motions should be received into a utensil containing either Carbolic Powder or Condy's Fluid, and Discharges from the Nose and Mouth should be received into a piece of rag and afterwards burned.

9.—Bed clothes and soiled things should be steeped in water containing Carbolic Powder (4 tablespoonfuls to each gallon of water). The clothes thus steeped for 24 hours should then be boiled and washed in the ordinary way, quite separate from all other things.

10.—Books and papers which have been in the sick room should be burned. No letters should be written in the sick room.

11.—The person nursing should wear a loose Cotton gown over the ordinary clothes while in the sick room. The nurse on leaving the sick room should thoroughly wash her hands in water mixed with Condy's Fluid, and also should remove the loose covering gown.

12.—A sheet steeped in "Carbolic Solution" should be hung completely across the doorway outside the sick room. (Four Tablespoonfuls of Carbolic Powder in One Gallon of Water).

13.—All Children from the Infected House should be kept from School (a Certificate to that effect being given by the Medical Officer of Health), also from playing or going about *with other children.* None of the household should go to Church, Chapel, or any other Public Meeting. None should go into any neighbour's house, and *no neighbours* should be allowed to visit the affected house on any account until the disinfection of the house has been thoroughly performed.

14.—After the patient has quite recovered, the house should have every room thoroughly fumigated with Brimstone, ceilings whitewashed, and walls (if papered) brushed down or re-papered. Floors, woodwork, and furniture to be washed with soft soap and hot water containing Carbolic Acid Powder in solution.

15.—Bedding and other articles exposed to infection should be disinfected in the disinfecting apparatus belonging to the Corporation.

16.—The Fumigation and Disinfection will be done free of charge by the Health Department. Disinfectants will also be supplied free of charge.

17.—No children or persons having had Scarlet Fever should return to School, or Business, or go to School, Chapel, or any other Public Meeting, or go in or upon any Public Street or Public Place whatsoever, until the house and all clothing, &c., have been thoroughly disinfected.

18.—As Infection exists in the "Peeling" of the skin, the patient must not appear on the Public Highway, or other Public Place whatsoever, until (1) the "Peeling" has entirely ceased, and (2) the house and clothing has been efficiently disinfected.

19.—All children or persons returning to School or Business from the infected house should have clean clothes, washed and disinfected since the illness.

20.—It is the duty of every person in whose house a case of Scarlet Fever is being treated, to remember that he or she may be responsible for giving the Fever to another person.

21.—The exposure of Infectious persons or clothing in public or in any street, shop, inn, or public conveyance, is punishable under the Public Health Act, 1875, and the Penalty for such exposure will be enforced.

JOHN ROBERTSON,
Medical Officer.

N.B.—See Clause 4 of Rules for Preventing the Spread of Scarlet Fever. This is the most important of all the instructions; and greatly extended powers are given by the St. Helens Corporation Act' 1893, in dealing with cases of Scarlet Fever which are not isolated.

Isolation may be obtained in any one of the following ways:—

1st.—In your own House, by carefully carrying out the enclosed Rules.
2nd.—By hiring, temporarily, an empty house for the purpose.
3rd.—At the Borough Sanatorium, Peasley Cross. (No charge).

III.—Another precaution which has been adopted during the past three or four years has been to warn people living in cottages near the infected one that there has been an outbreak of Scarlet Fever near the house. This is done by leaving the following handbill at 10 or 20 cottages nearest the infected one.

DANGER FROM SCARLET FEVER.

There being a case of Scarlet Fever near this house, the following PRECAUTIONS should be taken by you, as it can easily be prevented from attacking any person in this house.

(1)—**On No Account should any Visiting of the Infected House take place for at least Six weeks. During the whole of this time a Scarlet Fever Patient is Infectious.**

(2)—No Person or Article should be received from an Infected House.

(3)—Particular care should be taken that Children under your charge do not go near those Infected.

Persons suffering from Scarlet Fever, who expose themselves in any public place will be prosecuted, and information should be at once given at the Town Hall when an Infected Person is seen so endangering the lives of others.

JOHN ROBERTSON, M.D., B.Sc.,
Medical Officer of Health.

Town Hall, St. Helens,
September 28th, 1892.

IV.—Removal to Hospital.—It is impracticable to remove all cases of Scarlet Fever to Hospital during an epidemic period. In St. Helens, it would be advisable to remove cases from 70 or 80 per cent. of infected houses in ordinary non-epidemic times, as in, at least, this proportion of houses efficient home isolation is either impossible or so difficult to carry out that it is not safe to rely on it. During the recent epidemic, cases were chosen for removal to Hospital on account of some special danger of spreading infection, such as those occurring in houses attached to shops, laundries, etc., or in houses where the mother was approaching her confinement time; also in many cases where children had to look after themselves.

During 1896, 276 cases were removed and treated in Hospital, and 1,055 cases were treated at home.

The effect of Hospital treatment, quite apart from taking away the infectious person from the household, was most beneficial to the health of the person. Notwithstanding that many cases were removed on account of their severity, the mortality at the Hospital was little more than one half of that among cases treated at home.

It was as follows :—

1896—Cases treated at home —percentage mortality, 4·7.
1896—Cases treated at Sanatorium ,, ,, 3·2

V.—Disinfection.—A supply of Disinfectants is sent to every house every second or third day during the whole time that infection exists, and repeated visits are made to see that these are being properly used, and that the necessary precautions are being carried out.

Every house was disinfected at the termination of the case or after its removal to the Sanatorium. The disinfection consisted (*a*) in carting away all bedding, clothing, etc., which had been exposed to infection, and having these passed through a Warner's Disinfector. (*b*) After making the usual arrangements in the infected rooms, sulphur was burned. (*c*) Instructions were left that all floors, furniture, etc., should be thoroughly washed with a disinfectant.

As to the efficiency of the above means of disinfection, the following Statistics have been worked out. The total number of houses in which Scarlet Fever occurred was 883. In some of these the house was disinfected immediately after the patient or patients were removed to Hospital; in the

rest of them, after the recovery of the patient or patients. In 67 houses, fresh cases occurred within 48 hours after the disinfection. All of these may be looked upon as cases having received infection before the disinfection of the premises was done. In 93 other cases, second cases occurred at periods varying from 3 days to 6 weeks after the disinfection. That is to say—that assuming the infection in each of these cases to have been derived from imperfectly disinfected articles within the house, and not from fresh infection imported, the disinfection was more or less imperfect in 10 per cent. of cases.

When it is remembered how exceeding tenacious of life is the infection in Scarlet Fever, and how many are the ways in which it is capable of being spread, the above results are perhaps more satisfactory than at first they may appear.

More importance ought to be attached to the washing of the furniture, floors, and paint work in infected houses. It has often been exceedingly difficult to get this done, and very often it was done in the most perfunctory manner.

VI.—All children in an infected house are kept from school for a period of at least six weeks from the commencement of the last attack, the Schedules used for this purpose are as follows:—

No

TOWN HALL,

ST. HELENS,

To the Managers

.....*Schools*,

St. Helens.

On behalf and by the Instruction of the Mayor, Alderman, and Burgesses of the Borough of St. Helens, acting as the Sanitary Authority for the district of the said Borough, I hereby give you notice requiring you, with a view to preventing the spread of disease, to exclude from School attendance .....

.....

.....

.....

.....

.....

for a period of.....weeks from the date hereof.

Dated this.....day of.....189

.....

Medical Officer of Health.

Notice Expires 189

Premises Disinfected 189

Letter Sent.....189

REFER TO
No.

TOWN HALL,
ST. HELENS.

To the Managers
.....*Schools, St. Helens.*

GENTLEMEN,

Referring to my notice, numbered as above, I beg to say that the house in question has been disinfected, and that the children may return to School.

Yours very faithfully,

.....
Medical Officer of Heath.

In addition to the precautions already detailed, 10,000 handbills were distributed as follows:—

COUNTY BOROUGH OF ST. HELENS.

SCARLET FEVER.

CAUTION.

Scarlet Fever being prevalent in the Town at the present time, Parents and Guardians of Children are strongly urged to attend to the following:—

1—Scarlet Fever is a Disease which is fatal to a great many children, and permanently damages the health of others. In can be prevented from spreading by taking certain precautions.

2—While Scarlet Fever is prevalent, every child, who suffers from the following symptoms, should be seen by a Medical man—*i.e.*, sudden general illness with vomiting and a sick headache, usually with a slight sore throat and a red rash.

3—It is the duty, by Act of Parliament, of every Parent or Guardian of Children, who are suffering, or suspected to be suffering, from Scarlet Fever, to report the same to the Medical Officer of Health.

4—Whenever Scarlet Fever is known to exist in a house, no visiting of that house should take place until it has been thoroughly disinfected.

5—Particular care should be taken that children under your charge should not go near those infected, and no Pepson or Article of Clothing, etc., should be received from an infected house.

6—Persons who are suffering from Scarlet Fever, or who are in an Infectious condition, and who expose themselves in any public Place, such as Streets, Shops, Public Conveyances, etc., are punishable under tne Public Health Act.

7—It is particularly requested that members of the Public will give immediate information to the Medical Officer of Health regarding such illegal exposure of Infection. This information will be treated as private.

MEDICAL OFFICER OF HEALTH

Town Hall, St. Helens.

HOSPITAL RETURN CASES OF SCARLET FEVER.

By this is meant those cases of Scarlet Fever which occur in houses after the return home of cases of Scarlet Fever, and which may be due to the importation of infection from the Hospital.

These cases are of the greatest importance to the Sanitary Authority, as it has been decided recently that certain liabilities rest with the Authority in regard to them. Such cases occur at every Hospital where Scarlet Fever is treated; and at the present moment there is no recognised method of reducing their number.

The Medical Officer of Health of Manchester, who has carefully investigated the subject, puts forward what appears to be the most probable explanation of return cases—namely, that a child, coming from a Scarlet Fever Ward, carries in the nasal cavities certain infective material, notwithstanding that the peeling of the skin, and discharge from ears and nose had ceased, and that the utmost care had been taken to disinfect all clothing.

The number of cases are so small annually as not materially to militate against the use of a Hospital for the isolation of cases of Scarlet Fever, and it is probable that some means may be found of lessening the number of such cases.

During 1896 five cases occurred in houses within 10 days of the return of other cases from Hospital. In 19 other cases a longer interval elapsed between the return of the patient and the fresh outbreak. During 1896, as in former years, it was observed that there was a relationship between the number of acute cases in the Ward from which the patient was discharged, and the number of return cases of Scarlet Fever.

CONCLUSION.

The experience of the past few years has shown that in a cottage population as in St. Helens, one of the most important means of preventing the spread of the disease is to have ample accommodation for cases during non-epidemic times.

It is probably largely due to the absence of such accommodation that so large a number of cases occurred during 1896.

It is very important to remember that the longer one can ward off an epidemic of Scarlet Fever, the smaller the Death rate will be from it when it does occur.

PROSECUTIONS.

The following prosecutions were instituted during the year for exposing infected persons or clothing in—

April 13th—J. & I. A. Exposing person, infected with Scarlet Fever, in Street. Fined 10/- and costs each.

June 12th—A. McF. Exposing person, infected with Scarlet Fever, in Street. Fined 5/- and costs, or 7 days.

July 3rd—C. S. Exposing two children, suffering from Scarlet Fever, in Street. Fined 5/- and costs.

October 23rd—A. B. Exposing person, infected with Scarlet Fever, in Street. Fined 5/- and costs.

October 23rd—A. S. Exposing person and clothing, infected with Scarlet Fever, in Street. Fined 5/- and costs.

October 30th—J. H. McK. Exposing person, infected with Scarlet Fever, in a public conveyance. Fined 10/- and costs.

November 13th—S.F. Exposing two children, infectected with Scarlet Fever, in a shop. Fined 10/- and costs.

November 13th—E. B. Exposing person, infected with Scarlet Fever, in Street. Fined 5/- and costs.

COST OF A SCARLET FEVER EPIDEMIC.

It is not often possible to estimate the monetary loss which an epidemic of Infectious Disease gives rise to. Indeed it is often urged that the expense of preventive measure is a useless expenditure.

There are some items in the recent Scarlet Fever Epidemic which can be estimated. These are as follows :—

	£	s.	d.
1310 Notifications	163	15	0
Fees for attending Scarlet Fever patients, say at 10s. per case..	655	0	0
2168 Children absent for 10,406 weeks, equals a loss of Government Grant to schools of	361	0	0
Total	£1179	15	0

It will be noted that the cost to parents of 10s. per case for Medical Attendance and other sundries is certainly under estimated.

Similarily, the amount of loss to schools in Government Grant is certainly below what actually occurred. Most children were kept away from school for a few days before the case was notified, and in a large majority of cases they were kept away from school for days or weeks after the house was disinfected.

Nothing is charged in the above account for the extra expense that the Corporation have had in regard to Hospital Isolation, Disinfectants, extra wages, &c.

It is probable that every case of Scarlet Fever entails a loss of over 30s., or about £2,000 during the 1896 outbreak.

DIPHTHERIA.

The Death rate from this Disease was ·20 per 1000 of the population of St. Helens during 1896. In England and Wales it was ·25 during 1896.

The following Tabular Statements show the deaths and cases of sickness per annum, and the distribution of the cases of sickness.

Year.	1884	1885	1886	1887	* 1888	* 1889	1890	1891	1892	1893	1894	1895	* 1896
Deaths	11	11	10	11	21	29	13	9	12	18	9	8	17
Cases of Sickness	Before Notification Act.						104	69	81	79	86	66	72

* Years in which Scarlet Fever was epidemic.

DISTRIBUTION OF CASES OF SICKNESS FROM DIPHTHERIA AND MEMBRANOUS CROUP.

WARDS.	1890	1891	1892	1893	1894	1895	1896	Total
Eccleston, North. ...	8	8	14	9	7	10	6	62
Eccleston, South. ...	9	3	3	6	8	5	1	35
Central	5	9	5	7	5	3	6	40
Windle, North	12	15	6	13	20	13	12	91
Windle, South	23	10	15	6	3	6	9	72
Hardshaw	12	4	6	16	9	10	12	69
Sutton, East	17	8	10	15	9	4	6	69
Sutton, West *... ...	8	7	12	4	10	6	10	57
Parr	10	5	10	3	15	9	10	62
Totals	104	69	81	79	86	66	72	557

* Including Deaths in Fever Hospital.

The number of notified cases and the percentage mortality at each age group was as follows :—

Age.	Number of Cases.	Percentage Mortality.
Under 1 year	5	80%
1 and under 5	27	44%
5 ,, 10	10	10%
10 and upwards	30	0%

From the above figures it will be seen that Diphtheria was more fatal than usual as regards percentage mortality.

Compared with other towns, however, St. Helens does not, and never has, suffered from a high mortality rate for Diphtheria.

BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.

The work commenced in 1893 of aiding the Medical Attendant in diagnosing doubtful cases by the bacteriological examination of a piece of membrane or of a swabbing from the throat was continued during the year.

Only 37 specimens were sent for examination, against 43 in 1895, and 53 in 1894.

Of the 37 specimens sent, 11 showed the Diphtheria organism to be present.

WHOOPING COUGH.

This Disease caused 78 deaths during the year, equal to a death-rate of 0·96 per 1,000, as against 0·17 per 1,000 in the preceding year.

In England and Wales the rate was ·41 per 1,000 during 1896.

In former years the deaths from this disease were as follows:—

1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896
24	9	53	41	28	61	15	68	29	31	18	61	14	78

The deaths were all of children under 6 years of age, and were as follows:—

0	to	3	months	...	...	...	7
3	„	6	„	...	...	...	5
6	„	12	„	...	...	...	22
1	„	2	years	...	...	...	30
2	„	3	„	...	...	...	5
3	„	4	„	...	...	...	6
4	„	5	„	...	...	...	2
5	„	6	„	...	..	...	1

The cases were distributed over the Borough as follows:—

Eccleston, North	...	...	...	20
Eccleston, South	...	...	...	5
Central	...	...	...	11
Windle, North	...	...	...	11
Windle, South	...	...	...	8
Hardshaw	...	...	...	1
Sutton, East	...	...	...	13
Sutton, West	...	...	...	3
Parr	...	...	...	6

The distribution of deaths of this highly infectious disease was very uneven, and is not to be explained from the meagre information at hand.

21	deaths	occurred	in	the 1st	quarter
41	„	„	„	2nd	„
11	„	„	„	3rd	„
5	„	„	„	4th	„

At the present time practically nothing is done in St. Helens or in other towns to reduce the mortality and the serious damage to health which this disease causes. There are features in the natural history of the disease which render the usual preventive measures unavailable to a large extent. When children suffering from this disease are everywhere allowed to go about in Public Places, it is not to be wondered at that so many cases occur.

TYPHOID FEVER.

The Death-rate from Typhoid Fever was at the rate of ·49 per 1000. This represents, also, the mean rate for the previous ten years.

The number of cases of sickness from Typhoid Fever was 168. This number is 74 below the mean number reported annually since 1889.

The most marked feature during 1896 in regard to Typhoid Fever was that while the number of cases of the disease was comparatively small, the number of deaths was relatively large. This is seen on the table on page 44.

In the following table is shown the number of cases of sickness and the death-rates from Typhoid Fever for each year.

Year.	No. of Cases of Sickness.	Death Rate.	Year.	No. of Cases of Sickness.	Death Rate.
1875	No. of Cases not known.	1·30	1886	No. of Cases not known	·43
1876		·78	1887		·51
1877		1·46	1888		·32
1878		·74	1889	558	1·18
1879		·61	1890	150	·34
1880		·70	1891	185	·36
1881		·97	1892	138	·34
1882		·55	1893	315	·68
1883		·51	1894	172	·33
1884		·53	1895	257	·74
1885		·11	**1896**	**166**	**·49**
Mean.		·75	Mean.	242	·52

The following table shows the distribution of deaths in St. Helens during the past 13 years.

WARDS.	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	**1896**	Total.
Eccleston, North	3	1	1	5	7	16	6	—	1	4	2	6	**4**	56
Eccleston, South	3	—	—	1	1	8	4	2	3	5	3	5	**2**	37
Central	1	1	5	7	3	7	3	4	1	2	2	2	**3**	41
Windle, North..	2	1	5	2	2	7	2	3	—	6	2	3	**7**	42
Windle, South..	6	—	6	3	1	15	2	1	5	2	—	3	**3**	47
Hardshaw.....	4	2	4	5	2	4	3	2	2	4	5	1	**4**	42
Sutton, East....	5	—	3	4	1	12	2	1	3	3	1	2	**2**	39
Sutton, West* ..	5	1	1	3	3	9	2	12	6	18	10	34	**10**	114
Parr	4	1	3	4	2	3	—	1	4	8	1	3	**5**	39
Totals	33	7	28	34	22	81	24	26	25	52	26	59	**40**	457

* Including Deaths at Fever Hospital.

As in former years the largest number of deaths occurred in the 3rd and 4th Quarters as is seen below.

Year.	Deaths 1st Qtr.	Deaths 2nd Qtr.	Deaths 3rd Qtr.	Deaths 4th Qtr.	Total.
1890	6	4	8	6	24
1891	3	6	16	11	36
1892	5	6	6	8	25
1893	12	1	17	22	52
1894	13	2	4	7	26
1895	12	2	19	26	59
1896	**4**	**5**	**15**	**16**	**40**
Totals	55	26	85	96	262

The cases of Sickness from Typhoid Fever occurred as is shown in the accompanying Table, where also the number occurring in each of the months of the preceding 6 years is set out.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1890	20	4	7	4	4	12	10	15	31	23	15	5	150
1891	5	5	18	17	11	3	4	31	32	30	16	13	185
1892	7	9	10	18	9	5	14	11	13	11	21	10	138
1893	10	11	18	0	3	10	26	41	73	70	34	19	315
1894	19	11	18	9	6	5	15	17	25	24	11	12	172
1895	9	9	10	2	9	9	12	37	42	43	53	22	257
1896	**9**	**9**	**7**	**2**	**8**	**7**	**17**	**21**	**34**	**22**	**24**	**8**	**168**
	1st Qtr. 1896 **25**			2nd Qtr. 1896 **17**			3rd Qtr. 1896 **72**			4th Qtr. 1896 **54**			

The following Table shows the Distribution of the Notified Cases over the Borough during each year since "Notification of Cases of Sickness" came into force.

Wards.	1889	1890	1891	1892	1893	1894	1895	1896	Total
Eccleston, North ...	133	22	52	17	36	21	68	**22**	371
Eccleston, South ..	64	22	36	20	22	17	25	**18**	224
Central	46	14	9	12	19	16	27	**14**	157
Windle, North ..	46	16	11	13	51	29	26	**34**	226
Windle, South ...	67	10	26	22	40	12	24	**19**	219
Hardshaw	42	9	13	18	57	22	23	**16**	200
Sutton, East	66	14	8	19	10	26	8	**5**	156
Sutton, West	57	24	18	9	33	10	43	**20**	213
Parr	37	19	12	8	47	19	13	**20**	175
Totals	558	150	185	138	315	172	257	**168**	1941

The following Table shows the ages at which the various cases of Sickness and Deaths from Typhoid Fever occurred.

	Under 5 Yrs.	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	Over 55	Total.
Cases of Sickness ..	14	43	43	34	19	10	5	168
Deaths ..	2	6	9	13	7	—	3	40
Percentage Mortality 1896 ..	14·2	13·9	20·7	38·2	36·8	0·0	60·0	23·8
Do. 1895 ..	9·0	15·0	24·6	34·0	36·3	22·2	100	22·9
Do. 1894 ..	16·6	7·0	14·8	16·1	28·5	30·0	100	15·1
Do. 1893 ..	16·1	13·3	15·2	19·3	25·0	14·2	50·0	16·5

It will be seen that during 1896 and 1895, the percentage mortality from Typhoid Fever was very much higher than during the preceding two years.

The following rates are calculated from the Weekly Returns sent to the Local Government Board. They show the number of cases of Sickness from Typhoid Fever per 1,000 of the Population in each of the towns.

Town.	No. of Cases of Typhoid Fever notified.	Sickness— Rate per 1000 of the Population.	Town.	No. of Cases of Typhoid Fever notified.	Sickness— Rate per 1000 of the Population.
London	3129	·77	Manchester ...	508	·95
West Ham	373	1·42	Salford	296	1·40
Croydon	108	·91	Oldham	120	·83
Plymouth	28	·31	Burnley	105	1·02
Bristol	107	·46	Blackburn	123	·95
Cardiff	73	·44	Preston	119	1·04
Swansea	148	1·50	Huddersfield ...	70	·69
Wolverhampton ...	138	1·59	Halifax	93	·98
Birmingham ...	482	·96	Bradford	149	·65
Norwich	179	1·68	Leeds	413	1·02
Leicester	271	1·36	Sheffield	632	1·81
Nottingham ...	430	1·43	Hull	299	1·35
Derby	103	1·01	Sunderland	233	1·65
Birkenhead	150	1·37	Gateshead	110	1·11
Liverpool	1084	1·71	Newcastle-on-Tyne ...	176	·82
Bolton	176	1·46	ST. HELENS	168	2·07

It will be seen that the Sickness Rate for St. Helens was higher than that of any of the 31 towns set out above.

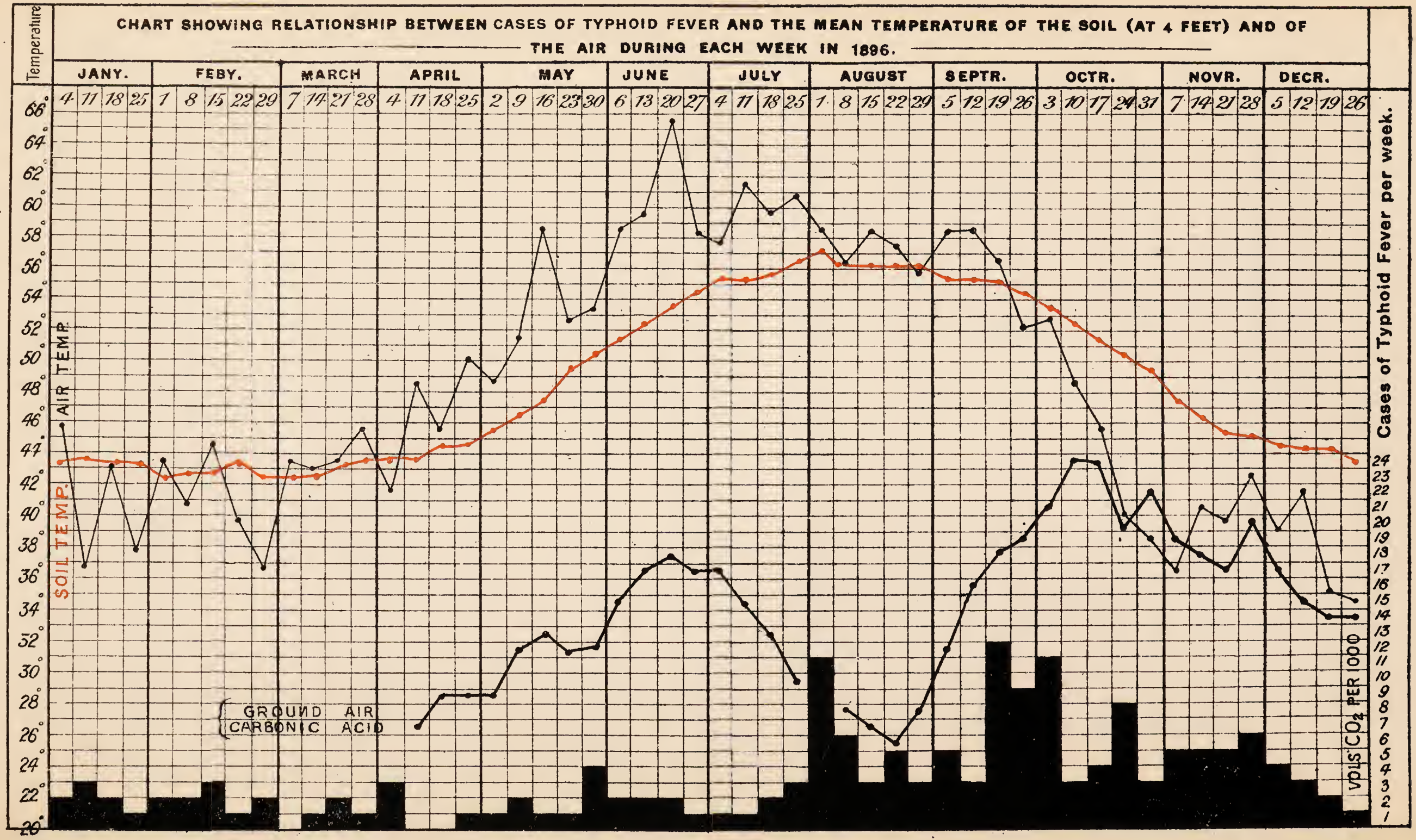


CHART SHOWING RELATIONSHIP BETWEEN CASES OF TYPHOID FEVER AND THE MEAN TEMPERATURE OF THE SOIL (AT 4 FEET) AND OF THE AIR DURING EACH WEEK IN 1896.
Temperature
JANY.
FEBY.
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTR.
OCTR.
NOVR.
DECR.
4 11 18 25 1 8 15 22 29 7 14 21 28 4 11 18 25 2 9 16 23 30 6 13 20 27 4 11 18 25 1 8 15 22 29 5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19 26
66° 64° 62° 60° 58° 56° 54° 52° 50° 48° 46° 44° 42° 40° 38° 36° 34° 32° 30° 28° 26° 24° 22° 20°
AIR TEMP.
SOIL TEMP.
GROUND AIR CARBONIC ACID
Cases of Typhoid Fever per week.
VOLS CO2 PER 1000
24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

CHART No. 2.

Chart No. 2 is added—as in former years—to show the weekly number of cases of Typhoid Fever, the temperature of the soil (at 4 feet) and the mean temperature of the air.

The Chart for 1896, taken in conjunction with those for former years, suggests very strongly a relationship between the temperature of the soil and the incidence of Typhoid Fever. It by no means is suggested that mere temperature of the soil causes Enteric Fever, but from the results of other experiments carried out in St. Helens, and from observations on the incidence of Typhoid Fever in other towns, it is almost certain that the Autumnal attacks of Typhoid Fever to which St. Helens is subject every year are due to certain conditions of soil, and that these conditions are most favourable, cæteris paribus, when the soil temperature reaches a certain height.

At a Meeting of the Health Committee on November 13th, 1895, a Report was presented, setting out the need there appeared to be for having a very careful series of experiments carried out with a view to clear up certain points in the causation of Typhoid Fever in St. Helens. Permission was at once granted to obtain the necessary assistance, and the requisite amount of money was voted It is not intended at present to detail the various investigations that have been undertaken as many of them are as yet incomplete.

In any Inquiry into the causation of a disease like Typhoid Fever, two methods of Inquiry must be adopted—(1) Statistical, (2) Experimental.

1.—Statistical.—It has been pointed out in previous Reports that St. Helens is a town with one of the highest Typhoid Fever Death-rates in the United Kingdom. Indeed, if a series of years are taken together, St. Helens will be found to be among the two or three with highest rates.

The mortality from Typhoid Fever in the United Kingdom has diminished annually since the introduction of better sanitary conditions. Speaking generally, the amount of diminution has been in direct proportion to the amount of sanitary improvement.

In St. Helens the mortality rate has also diminished, as will be seen below :

	Death-rates from Typhoid Fever.	
	1875 to 1885	1886 to 1896.
England and Wales	·26 ...	·17
St. Helens	·75 ...	·52

These figures represent a reduction of over 34 per cent. in Typhoid Fever Mortality in the case of England and Wales, and of over 30 per cent. in the case of St. Helens. The rates however indicate that the mortality is nearly three times as large in St. Helens as it is in the whole of England during either of the two periods referred to.

The causes which are in operation in the production of this high Typhoid Fever Rate have been frequently and most carefully inquired into by the Health Committee, and, undoubtedly, the preventive measures which have been carried out have been the means of reducing the mortality from Typhoid Fever.

Seasonal Variation.—Typhoid Fever may be said to be constantly present all the year round in St. Helens, but tending to show a regular seasonal variation. Taking the seven years, 1890 to 1896, the following shows the percentages of the cases occurring in each month.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
5·6	4·1	6·3	3·7	3·6	3·68	7·0	12·4	18·0	16·1	12·5	6·4

April, May, and June are the months when the smallest number of cases occur, while the largest number occurred in September. In 1892 and 1895 the maximum number of cases occurred in November. The above percentages show a steady increase from May to September, and an equally steady diminution to May again, with the single exception of the percentage for the month of March. In certain towns in England and Wales, having a population of 9,452,192 at the 1891 Census, there occurred 9,803 cases of Typhoid Fever during the 4 years, 1893 to 1896. Of these cases the 4 weekly percentages were as follows :—

PERIODS OF 4 WEEKS.*

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th
6·3	5·6	4·7	4·6	5·2	4·8	5·4	7·1	10·6	13·1	12·1	11·2	8·2

* These returns are issued for Weeks and not for Calendar Months as usual The periods are strictly comparable, being of equal durations.

The seasonal variations of Typhoid Fever is of the greatest importance in pointing to causes which are in operation in bringing about Typhoid Fever Outbreaks. If one looks at the table of notified cases of Typhoid Fever during the years 1890 to 1896 on page 43, one sees that in every year Typhoid Fever becomes prevalent in the autumn without a single exception. Again, if Chart No. 2 is examined carefully for each year, it will be noted that the prevalence of Typhoid Fever is not influenced by the temperature of the air alone. It will also be seen on these Charts that there is in St. Helens a relationship between the Mean Soil Temperature and the prevalence of Typhoid Fever. The true explanation of this is probably the same as that for Diarrhœa—which was first pointed out by the late Dr. Ballard—who found that when the 4 ft. soil temperature reached 56°F Diarrhœa prevalence commenced. Dr. Ballard came to the conclusion that the Disease known as Summer Diarrhœa was due to certain organisms which were present in the soil, and that it was necessary for the above temperature to be reached before rapid multiplication could take place.

In the case of Typhoid Fever we have to deal with a disease due to one organism, the *Bacillus Typhosus*, and it is well known to be capable of growth in the soil. The temperature of the soil at four feet will necessarily vary under different soil conditions at different places. In regard to Diarrhœa in St. Helens the critical temperature is 52°F.

If one allows a period of three weeks as the most usual time which elapses between the reception of the infection by the patient, and the time when the notification is received at the Town Hall, one finds that during 1892 to 1896 inclusive, Typhoid Fever becomes prevalent regularly three weeks after the soil temperature at four feet has risen to 52°F. Unfortunately, records were not kept before 1892, which would have enabled a longer number of years to be examined in this respect.

The number of cases of Typhoid Fever is always high during the time that the four foot soil thermometer is above 52°F.

Again, three weeks after the soil temperature falls below 52°F. a rapid diminution of cases takes place. The fall, however, is more gradual than the rise.

St. Helens, with its high Typhoid Rate, and with its soil temperature indicating a close relationship between Typhoid Fever and the Soil, appeared to offer a specially favourable opportunity for actual experiment. In this relationship it was desired to know whether the ordinary soil of the town was capable of supporting the healthy existence of the Typhoid organism, and, also, if it was found that it could so support the Typhoid organism was the organism actually to be found in areas where Typhoid Fever was specially prevalent? Experience elsewhere, and also that of other workers, showed the futility of conducting such experiments in the Laboratory under artificial conditions.

In the first instance, three patches of soil were liberally sown with a diluted broth culture of the Typhoid organism. Later, other three patches were sown in a similar manner. The results obtained were very instructive. The organism when sown on the surface of the ground appeared to grow and flourish, notwithstanding that for the first three months the weather was dry and sunshine abundant. Later, the weather during September and October was wet and dull, yet the organism was abundantly present.

Other patches were sown at depths of from 9 to 18 inches below the surface. In every instance the organism had grown to the surface within two months. By November 20th, the organisms had so far diminished in number that they could not be found in any of the six patches by the ordinary cultural means used. It is possible, and even probable, that when the temperature rises to the suitable degree during the coming summer that so rapid a multiplication of organism will take place that it may again be possible to find the Typhoid Organism in these patches of soil, and thus proving the possibility of the Typhoid Organism lurking about in soil of infected areas from year to year.

A very large number of samples of soil,* from localities were Typhoid Fever was prevalent, were examined for the presence of the Typhoid organism, and in not one single instance was Bacillus Typhosus found. These negative results do not indicate that the organism was absent in every instance, the difficulty of finding the organism was probably quite as great as finding the proverbial "needle in a haystack."

* The word "soil" is used in its widest meaning.

All experience goes to show that the organism of Typhoid Fever does not exist except in soils which have been polluted with organic matters and afterwards infected.

The exact conditions which favour the growth of Typhoid organism outside the human body are not known, but judging from experience in St. Helens, and in a very large number of other towns, it appears that the most essential condition for the production of Endemic Typhoid is **pollution of the Soil by means of human fæcal matter.** Nothing is more apparent in nearly every town where there is a high Typhoid Rate than this, and nothing is more apparent in towns with low Typhoid Rates than the evident absence of fæcal pollution of the soil. This observation has been made by all the most skilled Sanitarians. In St. Helens it has been evident, and has been pointed out repeatedly. Perhaps the most important statement to this effect is to be found in the Report on the Continued Prevalence of Typhoid Fever in St. Helens by the late Mr. John Spear.

The recently added district of Dentons Green is a good example of the harm capable of being done by a filth polluted soil. Many of the houses in this area have been well built and well sewered, but a number have had sewers in connection with them, every joint of which leaked into surrounding sand. The junctions in these Sewers were in many instances made by knocking a hole in the top or side of a pipe and allowing the sewage from the tributary drain to get in as best it could.

The privies were in most instances built with flag bottoms, without any mortar or cement with a result that when a hole is made alongside of them pools of liquid filth are formed, and the sandy soil surrounding the privies and under them was found to be saturated with filth

The back passages in this district were in some instances little better than ashpits. The dust from the houses was brushed into the passage, and the swillings from the back yard and other slop water were allowed to get into the passage.

As a result of this state of affairs Typhoid Fever has been specially prevalent in this district, and it is even feared that it may be prevalent for some years until the soil has had time to clear itself.

The chief soil pollution in St. Helens is that from Privy middens. This is also the case in many other towns. Unfortunately, there are a sufficient number of these still existing in St. Helens to maintain our high Typhoid rate.

So many purely local conditions are at work in the causation of Typhoid Fever that it is extremely difficult to demonstrate statistically the exact part that each plays. The following figures in regard to Typhoid Fever and closet accommodation bear unmistakable evidence of the influence of Privy middens in causing Typhoid Fever in St. Helens.

The records have been gone over with extreme care for the years 1890 to 1896, asd each case of Typhoid Fever has been sorted according to the month of the year and the form of closet in the house in which it occurred. Cases occurring in houses with any form of water closet have been omitted, as the number is too small to be useful.

The number of Houses with Privies was larger in 1890 than that with pails. The number with pails exceeded those with privies in 1896.

If there was no influence special to these varieties of closets, it might be assumed that the relative numb·r of cases in each group would not vary much from month to month.

It will be noted that in May, when Typhoid Fever is usually at its lowest, there were 27 Privy houses, and 20 Pail houses attacked.

In June, 22 Privy houses and 23 Pail houses.

In July, when the Typhoid season begins, there were 60 in Privy houses and 42 in Pail houses.

In August, 103 cases in Privy houses and 58 in Pail houses.

In September, when Typhoid Fever prevalence is generally at its height, there were 162 in Privy houees and 92 in Pail houses.

In October, 141 in Privy houses and 86 in Pail houses.

In November, 87 in Privy houses and 63 in Pail houses.

In December, 42 in Privy houses and 41 in Pail houses.

In January, February, March, and April, there was an average of 43 cases each month in Privy houses and 23 in Pail houses.

The way in which the number of cases in the early months of the year continue high in the case of the Privy houses is very suggestive of their special influence.

HOUSES IN WHICH CASES OF TYPHOID FEVER OCCURRED --
1890 TO 1896, INCLUSIVE.

Houses.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
*With Privy Middens...	47	36	48	42	27	22	60	103	162	141	87	42
With Pail Closets ...	26	22	32	15	20	23	42	58	92	86	63	41

* When it is remembered that the houses in the large rural district surrounding the town, nearly all of which have privy middens, are included in this list, and that the chances of Typhoid occurring in such isolated houses is much less than similar houses in the town, it may be safely assumed that the number of houses with privies is less than that with pail closets.

Among other experiments, it was desired, if possible, to see whether the degree of bacterial activity going on in the soil bore any relationship with the prevalence of Typhoid Fever.

For this purpose the amount of Carbonic Acid was taken as a measure of the bacterial activity, as, by far the larger portion of the CO_2 to be found in the soil is due to the splitting up of organic matters by micro-organisms.

While preparing for carrying out these experiments, an interesting observation was made, and one which will require further study, namely—that on sinking tubes for collecting ground air at 1ft. 3ft. and 6ft. deep, it was found that for the greater portion of the year the ground water blocked the 6ft. tube, and often, also, the 3ft. tube. This occurred in all the sites chosen for the observations. The only complete record of Carbonic Acid was, therefore, that got from the 1ft. tube.

The number of volumes of Carbonic Acid per 1,000 volumes of air were estimated daily since April. The weekly means of these readings will be found below, as well as on Chart No. 2.

Weekly means of the daily estimation of Carbonic Acid in the Ground Air, expressed as volumes of CO_2 per 1,000 vols. of Ground Air :—

WEEK.	Amount CO_2.	WEEK.	Amount of CO_2.
Week ending April 11...	—	Week ending Sept. 5...	11·9
,, ,, 18...	8·1	,, ,, 12...	15·6
,, ,, 25...	8 5	,, ,, 19...	17·9
,, May 2...	8·9	,, ,, 26...	18·7
,, ,, 9 .	11·67	,, Oct. 3...	20·1
,, ,, 16..	12·16	,, ,, 10...	23·3
,, ,, 23..	11·47	,, ,, 17...	23·5
,, ,, 30...	11·02	,, ,, 24 .	19·8
,, June 6...	14·57	,, ,, 31..	21·2
,, ,, 13...	16·27	,, Nov. 7...	18·9
,, ,, 20...	17·8	,, ,, 14...	17·8
,, ,, 27...	16·4	,, ,, 21...	17·1
,, July 4...	16·4	,, ,, 28 .	16·7
,, ,, 11...	14·1	,, Dec. 5 .	16·12
,, ,, 18...	11·8	,, ,, 12 .	14·8
,, ,, 25...	9·7	,, ,, 19...	13·8
,, Aug. 1...	—	,, ,, 26 .	13·7
,, ,, 8 ..	7·9	,, ,, 31..	11·1
,, ,, 15...	5·3		
,, ,, 22...	5·7		
,, ,, 29..	7·5		

It will be noticed that the amount was small in April; that it gradually rose till Juue 20th ; that it again fell until August 24th ; that it rose again and reached its maximum during the second and third weeks in

October; after which it again gradually fell. The explanation of the fall, which commenced in July is not an easy one. Possibly, it may be due to the fact that the rainfall during the preceding months was small, and the amount of bright sunshine considerable.

The above observations are being continued and extended.

Level of the Ground Water has been said to play an important part in the causation of Typhoid in various ways, and although the observations of Pettenkoffer in this respect have been somewhat discounted for some time, there appears to be some evidence, both in St. Helens and elsewhere, that it has an influence on the Typhoid prevalence

Speaking generally, the ground water level in St. Helens is unusually near the surface. In Dublin and several other towns, where Typhoid Fever is specially prevalent, this high ground water level has been commented on. Sufficient observations have not yet been made on this subject to enable a conclusion to be come to. It is thought that a high ground water level may act by keeping the upper layers of soil damp, and thereby furthering the growth of the Typhoid Organism.

If such be the case, deep drainage has been proposed as the best means of combatting this influence.

For convenient reference, the monthly means of the weekly readings of the Ground Water Level, and also the number of Notified cases of Typhoid Fever are set out below.

1896.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Notified Cases of Typhoid Fever..	9	9	7	2	8	7	17	21	34	22	24	8
Distance of Ground Water from Surface in feet & inches ..	2′ 1½″	2′ 2¾″	2′ 0¼″	2′ 3½″	2′ 9¾″	3′ 2¾″	3′ 10″	4′ 6″	3′ 6½″	2′ 0½″	2′ 0″	2′ 0½″
Rainfall in inches ..	·955	1·255	3·530	1·305	·46	3·690	2·125	3·050	5·317	3·98	1·415	4·115

Influence of Sex.—During the six years 1891 to 1896, there were 1,235 cases of Typhoid Fever notified, and of this number, 729 were males, and 506 were females. That is to say, out of every 100 persons attacked with Typhoid Fever, 58·8 were males, and 41·1 were females.

At the Census of 1891 there were in St. Helens, in every 100 persons, 52·1 males, and 47·8 females.

It will, therefore, be apparent that males are to a considerable degree more liable to be attacked with Typhoid Fever than females.

In England and Wales at the Census of 1891, there were in every 100 persons 48·4 males, and 51·5 females.

These figures would indicate that, from a consideration of the sex distribution of the population, St. Helens would, other things being equal, have a higher Typhoid Rate than that for England and Wales.

Assuming the population of St. Helens to have had the same sex distribution as that in England and Wales during the six years 1891 to 1896, there would have been 1,176 cases of Typhoid Fever, instead of 1,235. That is a reduction of 59 cases in six years due to the influence of sex.

During every month, except February, of the years 1891 to 1896, a larger number of males were attacked than females, as is seen below.

Reported Cases of Typhoid Fever—1891 to 1896.

Month.	Males.	Females.	Percentage of Males over Females attacked
January	42	14	300%
February	23	32	71%
March	41	36	113%
April	25	24	104%
May	28	19	147%
June	22	15	146%
July	50	40	125%
August	91	62	146%
September	140	93	150%
October	125	89	140%
November	96	44	218%
December	46	36	127%

The mortality among persons attacked with Typhoid Fever showed a tendency to be specially heavy among the males. Of the 1,235 cases reported during six years, 228 deaths occurred, that is to say, 18·4 of every 100 persons attacked with Typhoid Fever died of the disease.

Of every 100 Males attacked, 19·3 died.

Of every 100 Females attacked, 17·2 died.

So that not only are males more susceptible to Typhoid Fever, but where once the disease is contracted, it is more liable to terminate fatally.

In England and Wales during the 24 years, 1871 to 1894, Typhoid Fever caused the deaths of 77,790 males, and 75,630 females. That is, out of every 100 persons who died of Typhoid Fever, 50·7 were males, and 49·2 females.

The above figures refer to the total deaths during the 24 years, but when the individual years are examined, it is found that an increasingly

heavy mortality among males has occurred, *i.e.*, during the first five years of this period there were 100 deaths of males to 104 females, and during the last five years, 100 male deaths to 84 female deaths. A similar, but less marked, increased fatality among males has occurred in St. Helens within recent years.

What the exact cause is of this greater incidence and mortality among males is at present unknown. The subject is one which requires most careful investigation, as the correct explanation would point to some of the influences at work in producing Typhoid Fever.

Influence of Age.—Another influence at work in the causation of a high Typhoid Rate in St. Helens is the Age Distribution of the Population. During the six years, 1891 to 1896, the following figures show the number of persons attacked at each age, and the number of these who died; also in column No. 4, the percentage mortality at each age group; in column No. 5, the sickness rate at each age per 1000 of the population; and in column No. 6, the percentage of cases of sickness at each age group.

TYPHOID FEVER, 1891—1896 (ST. HELENS).

1	Total Notified Cases. 2	Total Deaths. 3	Percentage Mortality. 4	Sickness rate per 1000 of Population at each Age. 5	Percentage of Cases at each Age Group. 6
0— 5 years.....	98	16	16·3	1·42	7·92
5—10 „	230	30	13·0	3·88	16·15
10—15 „	192	26	13·5	3·61	15·47
15—20 „	168	25	14·8	3·31	13·29
20—25 „	168	33	19·6	3 71	13·32
25—30 „	107	29	27·1	2·15	8·53
30—35 „	108	25	23·1	3·61	8·73
35—40 „	65	18	27·6	2·24	5·09
40—45 „	44	9	20·4	1·82	3·58
45—50 „	30	4	13·3	1·69	2·43
50—55 „	19	4	21·0	·73	1·54
55—60 „	4	2	50·0	·38	·33
Over 60 „	9	7	77·7	·46	·86

It will be noted from Columns 2, 5 and 6, that the largest number of cases occurred between 5 years and 35 years of age. The attack rate per 1000 living at each group is high for ages between 5 years and 40 years, and that after 40 years of age is reached the attack rate gradually diminishes.

It has been frequently pointed out that the population of St. Helens is remarkable for the large number of children and young adults that it contains when compared with the population of England and Wales as a whole, or with such a population as is to be found in an Agricultural County like Norfolk.

There can be no doubt but that persons at ages between 5 and 40 years are more liable to be attacked than at other ages. If, therefore, the population of St. Helens had been, as regards its age distribution, as that of Norfolk, or that of England and Wales, the cases would have been as follows :—

Typhoid Cases in a Population of the same size as that of St. Helens, but with Age Groups as at present.

	St. Helens.	County of Norfolk.	England and Wales.
Total Cases of Typhoid Fever ...	1235	1142	1196

That is to say, had St. Helens had a population like that of Norfolk it would have had 93 fewer cases during six years. If the population had been similar in age distribution with that in England and Wales it would have had 39 fewer cases, allowing, of course, in each case, that other conditions were equal.

DISTRIBUTION OF TYPHOID FEVER IN WARDS.

On page 43 will be found a table showing the Distribution of all the Cases of Sickness from Typhoid Fever since the Notification of Infectious Diseases came into operation. The Sickness rates per 1000 of the population in each Ward for the six years, 1891 to 1896, are set out in the following Table.

Sickness Rates per 1000 of the Population in each Ward.

Wards.	1891	1892	1893	1894	1895	1896
Eccleston, North	6·08	1·94	4·02	2·28	7·17	2·29
Eccleston, South	5·42	2 91	3·09	2·29	3·37	2·19
Central	1·09	1·45	2·29	1·92	3·24	1·68
Windle, North	1·68	1·96	7·57	3·74	2·97	3·71
Windle, South	3·08	2·59	4·67	1·39	2·78	2·18
Hardshaw	1·40	1·89	5·85	2·23	2·30	1·59
Sutton, East	1·07	2·44	1·23	3·03	·85	·55
Sutton, West	2·18	1·08	3·93	1·18	5·03	2·27
Parr	1·49	·96	5·46	2·16	1·45	2·15
Whole Borough	2·59	1·88	4·20	2·23	3·23	2·07

The above figures show that the Sickness Rate from Typhoid Fever varies very much in the different Wards each year, and also in the same Wards from year to year. Typhoid Fever is not mainly confined to certain Wards as has been supposed.

TYPHOID SICKNESS (ST. HELENS 1891 TO 1896 INCL.)

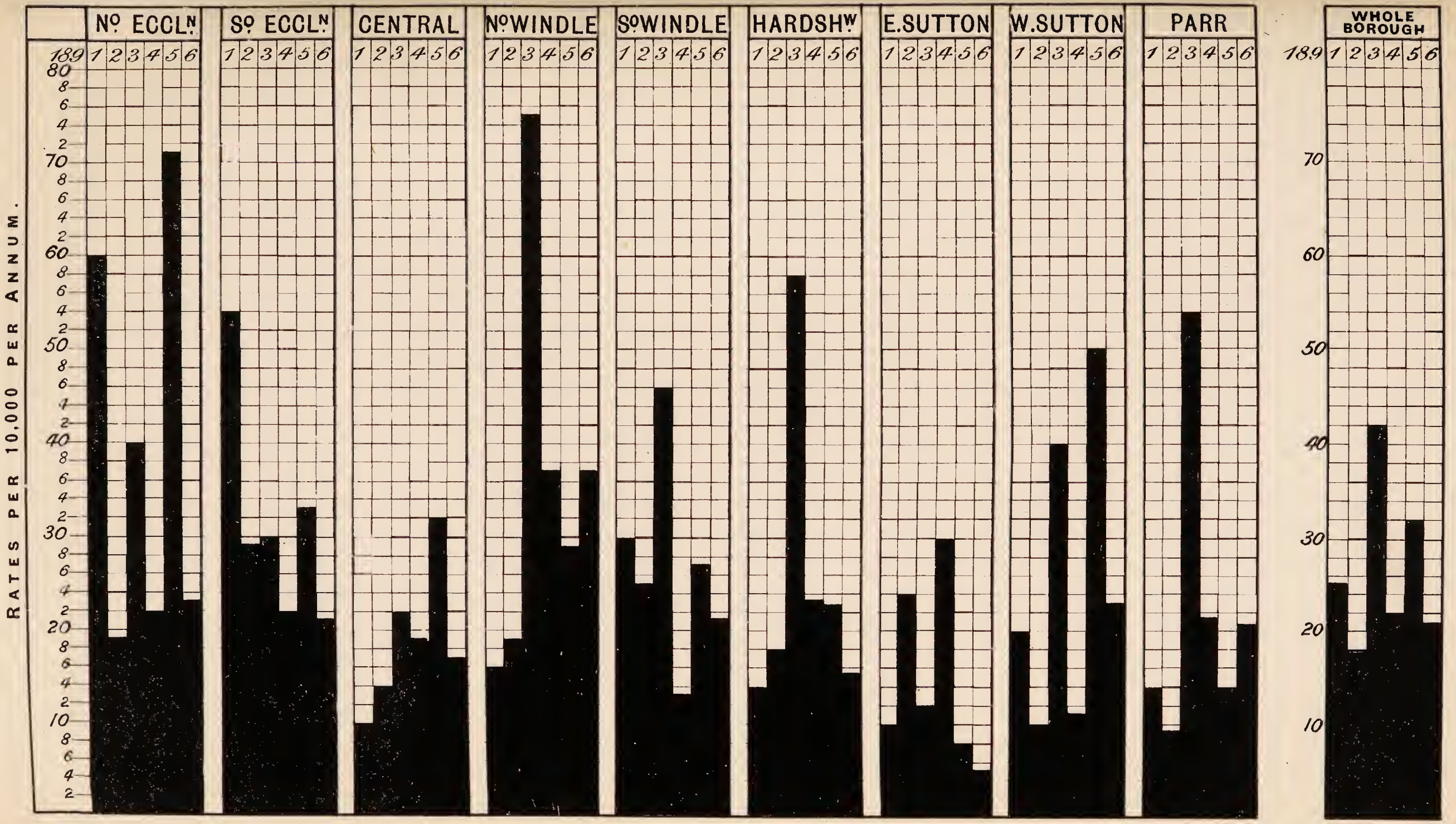


CHART No. 3.

Perhaps the most obvious conclusion to be drawn from the above is that a high Typhoid Rate occurs at one time in one area, and at another time in another area, and that, to some extent the degree of prevalence is due to density of the population. The areas of prevalence are not of course coterminous with the Ward boundaries. If one imagines areas of infection originally equal in degree and extent, such areas would be much more potent for harm in densely crowded Wards like North Eccleston than they would be in Sutton or Parr. This is possibly the explanation of the very acute outbursts which have occurred in North Eccleston and North Windle.

Chart No. 3 shows the above Typhoid rates for each Ward for the years 1891--1896, and the variation from year to year is more easily appreciated from it than from the Table of Rates.

The usual Map is appended, showing the distribution of cases of Typhoid Fever in 1896.

When this Map is compared with similar maps for previous years, it is found very markedly that certain small areas appear to be specially liable to have cases of Typhoid Fever at intervals of perhaps months or years.

Instead of the usual Typhoid Street List there will be found, as an appendix, a list of the principal streets, with the numbers of each house in which a case of Typhoid Fever has occurred since 1889. The numbers have been separated so as to show all the infected houses on the one side of the street and on the other.

From a knowledge of the situation of the houses in the Streets which run parallel and adjacent to one another, it is possible to map out many small areas in which Typhoid Fever seldom seems to be absent.

SOURCE OF INFECTION IN CASES OF TYPHOID FEVER.

As in former years the infection in the great majority of cases of Typhoid Fever could not be traced to previous cases. In this large number the infection was probably derived indirectly from areas of polluted and infected soil; the infection being probably swallowed or inhaled, directly, along with dust in the air, or, indirectly, by means of food or water which had been specifically contaminated by dust from these infected areas.

Susceptible persons living in the neighbourhood, and who have to frequently pass such areas, will be more liable to be attacked than persons living at a distance, and who do not so frequently visit the areas. This is possibly the explanation of local outbursts in larger areas.

During 1896, as in former years, there was abundant evidence that a small number of cases derived infection directly from a previous case. In these cases, however, the actual mode in which the infection was conveyed was similar to that in the larger group above described.

Water Supply.—A most exhaustive examination of the deep well waters which supplied St. Helens during the year 1896 was made, and also that

supplied to individual houses. Everyone of the waters are from a Chemical point of view of the highest quality as regards organic matter. The same may be said of them from a Bacteriological point of view. Both the character and the number of the organisms found every month showed the waters to be of specially high quality. The Water Supply is on the "Constant" System. There are practically no storage cisterns in the houses.

There is no evidence of any leakage into mains. For this purpose the supply to houses, in which Typhoid Fever had occurred, was examined during the year.

PRECAUTIONS ADOPTED IN CASES OF TYPHOID FEVER.

These were essentially the same as in former years—(*a*) as regards the inquiries made as to origin of infection in each case; (*b*) as to removal, by special pails, of all infected materials two or three times weekly; (*c*) as to the supply of disinfectants every second or third day, and the final disinfection of the premises.

In a town like St. Helens where the Typhoid Sickness Rate is high, it is very important that the best known system for the removal of excremental matters should be adopted. It is most satisfactory to record that during 1896 a resolution was passed by the Council, that all new property and also "Conversions" should be on the ordinary Water Carriage System, except in outlying rural districts or in other special cases.

DIAGNOSIS OF TYPHOID FEVER.

Very important progress has been made during 1896 in our means of diagnosing doubtful cases of Typhoid Fever and of confirming the diagnosis in cases where the ordinary symptoms of the disease are present.

An early and correct diagnosis of every case of Typhoid Fever is of the greatest importance to Sanitary Authorities. It is a matter of common knowledge among the medical profession that there are many cases of Typhoid Fever which cannot be with certainty diagnosed by the ordinary clinical signs and symptoms, and also that there are many others in which Typhoid Fever may be suspected to be present, but in which, clinically, the diagnosis cannot be made till days or weeks have elapsed.

In such cases an early and correct diagnosis will be of immense value to the patient and his medical attendant by allowing of the proper treatment being commenced at an earlier period than it might otherwise be, and, therefore, of giving a better chance of recovery. To the Sanitary Authority who desire that all infected matters should be destroyed, it prevents much dangerous infected material getting into places where it is often impossible to kill it.

In many cases an early and correct diagnosis will allow of the removal to hospital of cases which could only be removed with considerable risk were a few more days, or even weeks, allowed to elapse.

A considerable amount of time was spent during the year in testing the value of several methods which had been proposed. Elsner's method was given an extended trial during the early portion of the year, and as a means of aiding diagnosis it was found to be quite valueless.

Early in March, Pfeiffer, and Kolle, communicated certain results of experiments on the specific properties of the blood of patients suffering from Typhoid Fever, and suggested the use of these as a means of diagnosis. Their method however, required elaborate precautions and was such as not to be of practical utility.

During March, Professor Max Gruber published his researches on this subject, in which he confirmed the essentials of Pfeiffer's work, but simplified the process enormously. The first published record of the practical application of these works appeared in the July number of "Bulletin et Mem. de la Soc. Med." As a result of extended observations and experiments a method of manipulating the test was early adopted in St. Helens, which gave perfectly satisfactory results. This method has been continued uniformly since the end of September, and although other workers at first adopted different methods, most have, as a result of their own experience, sooner or later adopted one similar in essentials to that originally worked out here.

The method is as follows:—An addressed envelope, containing three specially sterilized capillary tubes in a box is given to the medical attendant who may wish to have his case tested. The envelope also contains the following sheet which sufficiently explains the procedure.

SERUM DIAGNOSIS OF TYPHOID FEVER.

Initials of Patients Name.....

Age of Patient.....

No. of Days ill.....

If previously had Typhoid Fever .....

Tubes sent from Dr. .....

of.....

Dated.....

DIRECTIONS.

I—Prick the Patient's finger with a fine needle, and sqeeze out a bead of blood.

II.—Put a portion of this blood in each of three of the enclosed capillary tubes, and seal the ends.

III.—Forward as soon as possible to the Medical Officer of Health, St. Helens.

The result of Examination can be obtained within a few hours, if desired.

Medical Officer's of Health Department,
Town Hall, St. Helens,
November, 1896.

RESULTS.

The blood from 46 persons collected as above was examined. For the purpose of stating the results, these cases have been divided into 5 Groups.

Group I.—Blood from persons in good health and who had not previously suffered from Typhoid Fever. The blood in each case did not show any Typhoid reaction.

Group II.—Blood from persons in good health, but who had had Typhoid Fever, or were said to have had it, at periods varying from 1 to 13 years. All of these, with but one exception, gave a definite Typhoid Reaction. The one specimen that gave no Typhoid Reaction was from a man who had gone through a typical attack of Typhoid Fever a year previously.

Group III.—Patients suffering from diseases which were definitely not Typhoid. All of these gave results showing that there was no Typhoid reaction in the blood except in one case. This exception is perhaps of no value, as there was possibly an error in working the test in the first instance. It was a case of general tuberculosis, and on first examination the test was positive. On repeating the test on the following day under better conditions it gave negative results.

Group IV.—Patients suffering from undoubted attacks of Typhoid Fever. The blood from 9 such cases were examined. In every one of these a very well marked Typhoid reaction was obtained. In many of the cases it was so powerful that the blood could be diluted in the proportion of 1 to 150, and yet a distinct Typhoid reaction was obtainable.

Group V.—Contains all cases in which, clinically, the diagnosis of Typhoid Fever was doubtful. It is by far the most important Group, and contains 21 cases.

Of the 21 cases, 10 gave a positive Typhoid Fever reaction, and 11 gave a negative result. In each of these the negative cases the result was proved to have been correct by their after history.

Outline of 10 cases, in which positive results were obtained :—

Case I.—A man suffering from ill-defined Typhoid Symptoms, together with some septic poisoning due to a recent wound. Here the positive result was most helpful to the medical attendant. The after history proved this to have been an undoubted case of Typhoid Fever.

Case II.—A man suffering from Pleurisy, with effusion, gradually developed symptoms pointing to Typhoid Fever. The blood gave a positive result. A few days later a typical Typhoid eruption and other symptoms appeared. The pleuritic fluid gave a positive reaction.

Case III.—A man, named Peel, aged 21, was well and at work on November 30th. He was first seen by his medical attendant on December 2nd. He then had ill-defined symptoms pointing to Influenza. On December 6th, his symptoms were possibly those of Typhoid Fever, but not probable. The blood serum gave a positive result on this day, probably

the 6th day of the disease. He went through a typical and very severe attack of Typhoid Fever in Hospital. The doctor in attendance asserts that this man's attack was so severe that but for the early recognition of the disease he could not have been removed to Hospital, and as special nursing was necessary, his life really was saved by the early recognition of the disease by the Serum method.

Case IV.—In another case the blood was sent on what was supposed to be on the 7th day when Typhoid could only be suspected. The after history was typically that of Typhoid Fever.

Case V.—A child, aged $3\frac{1}{2}$ years, suffering from Pneumonia, with some vague Typhoid symptoms. The after history completely confirmed the positive Serum reaction in this case.

Case VI.—The above child's mother complained of slight illness while nursing. The blood serum was taken and gave positive results. This woman afterwards died of Hœmorrhage from Typhoid Ulcer.

Case VII.—A case of Continued Pyrexia without other symptoms. In this case the medical attendant wrote saying that the after history was typically Typhoid.

Case VIII.—A very interesting case from many points of view was that of a girl, aged 20. She was well and went to a party on Christmas Day. On the 27th she took ill; her medical attendant obtained a sample of her blood on the 29th. This could not have been more than the fourth day of the disease. The serum gave a positive and fairly well marked reaction. The rash appeared on the 9th. This case was diagnosed by the Serum method at least five days before it could have been by clinical symptoms.

Case IX.—A case in which the Serum reaction was intense and well marked six days before the clinical symptoms were definite. At the time the blood was sent the medical attendant said that Typhoid was only remotely thought of.

Of the 11 cases of suspected Typhoid Fever in which the reaction was negative, the after history showed that the Serum diagnosis was correct in every instance.

Case I.—A case sent into Hospital as Typhoid Fever. No reaction was obtained by the Serum method. The patient was discharged as "well" at the end of a week.

Case II.—
Case III.—
Case IV.— } Doubtful Typhoid Symptoms. No Serum reaction. { After history proved them to be not Typhoid Fever.

Case V.—A case in which the blood was examined on December 17th, with negative results. On the 23rd, the medical attendant could for the first time say that the case was definitely not Typhoid.

Case VI.—A case of Pneumonia with Typhoid-like symptoms; negative result.

Case VII.—A case of Pyrexia, in which the diagnosis was extremely doubtful at first.

Case VIII.—Similar to No. VII.

Case IX.—A case admitted to General Hospital as Pleurisy. After 10 days the patient developed Typhoid-like symptoms—Typhoid-like stools, furred tongue, &c. Negative Serum reaction. After history undoubtedly not Typhoid.

Case X.—Another case from same Hospital at same time was removed to Fever Hospital as Typhoid. Negative result. After history showed that it was not a case of Typhoid Fever.

Case XI.—A case was notified as Typhoid by a very experienced practitioner and removed to Hospital. The blood Serum was obtained on the same day and was definitely negative. The girl died in a collapse pointing to Perforation. A post-mortem examination was made and no Typhoid lesion was found. There was, however, acute general milliary Tuberculosis.

DIARRHŒA.

The death-rate from Diarrhœa in St. Helens during 1896 was at the rate of ·77 per 1,000 per annum. In England and Wales it was ·56 per 1,000.

During only two years since 1870 has there been fewer deaths from this disease.

The death rates from Diarrhœa in St. Helens have fluctuated very much from year to year during the past 27 years, as will be seen in the following table.

It is to be feared that the reduction which occurred in 1896 is not in the main due to any better attention to the feeding of young infants, but is probably due to more favourable climatic conditions.

The form of Diarrhœa to which the statistics in this report chiefly relate is a preventable disease, and it is to be hoped that the "Directions for the Feeding of Infants," which are being distributed by the Registrar to nearly every person who registers the birth of a child, will assist in reducing the death rate.

CHART SHOWING RELATIONSHIP BETWEEN DEATHS FROM DIARRHŒA AND THE MEAN TEMPERATURE OF THE SOIL (AT 4 FEET) AND OF THE AIR DURING EACH WEEK IN 1896.

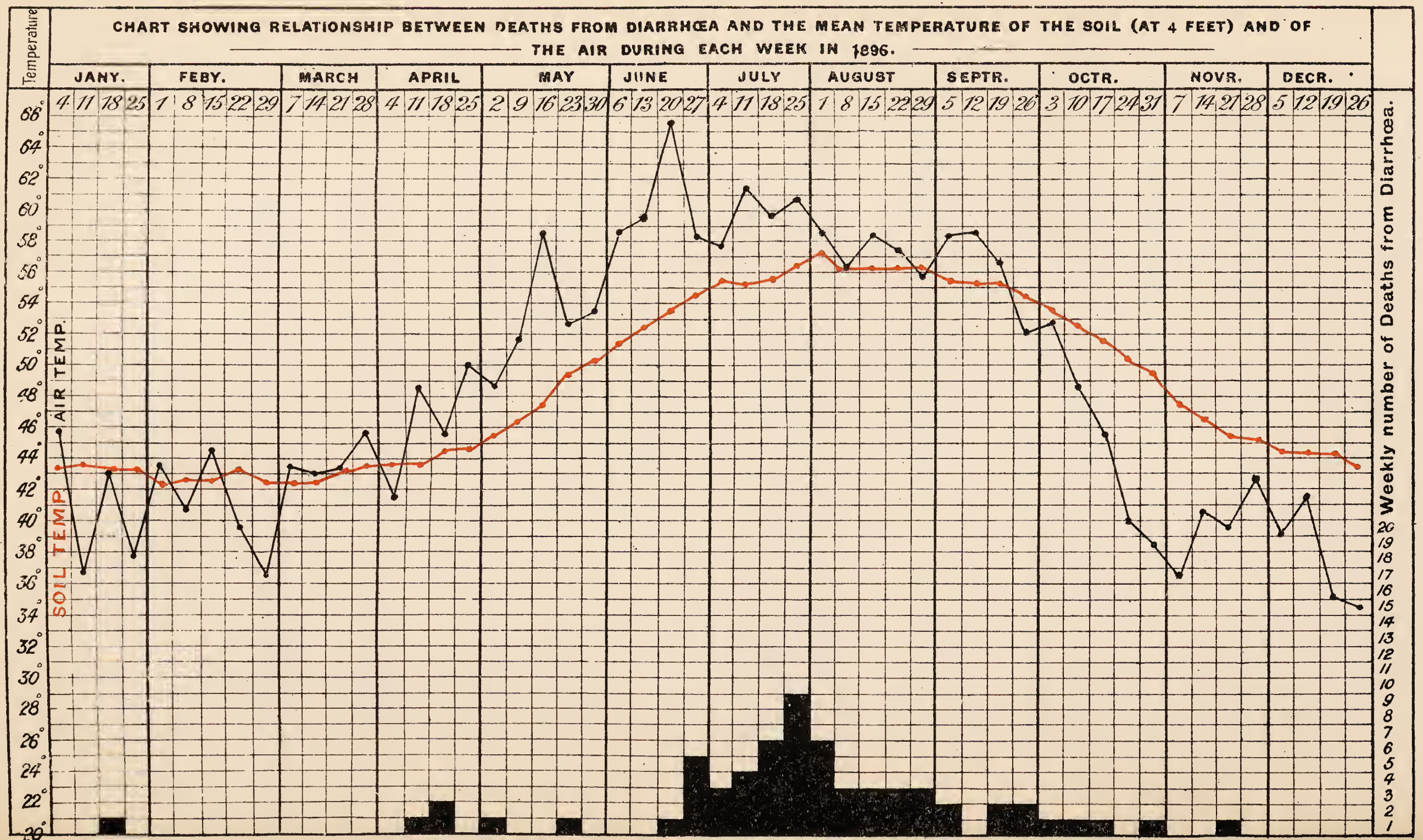


CHART No. 4.

In the following Table are placed, side by side, certain Statistics relating to Diarrhœa and Typhoid Fever, and also certain Meteorological Statistics.

YEAR.	Total Deaths from Diarrhœa.	Total Deaths from Typhoid and Continued Fever.	Death Rate from Diarrhœa per 1,000.	Death Rate from Typhoid and Continued Fever per 1,000.	Death Rate from Diarrhœa in England and Wales.	Mean Temperature of the Air for the year.	Rainfall at Eccleston Hill.
1870	97	23	2·18	·51	1·16	48·1	27·5
1871	89	28	1·96	·61	1·09	46·9	25·0
1872	65	24	1·39	·51	·99	49·3	44·3
1873	79	24	1·65	·50	·96	48·2	24·9
1874	110	25	2·25	·51	·92	48·6	27·8
1875	101	65	2·02	1·30	1·02	48·4	30·1
1876	86	40	1·69	·78	·91	48·4	36·3
1877	74	34	1·41	1·46	·61	48·3	41·7
1878	132	40	2·45	·74	1·00	48·5	35·5
1879	52	34	·94	·61	·45	45·5	24·3
1880	130	40	2·30	·70	1·17	48·2	29·7
1881	76	56	1·31	·97	·55	46·9	36·7
1882	85	33	2·12	·55	·65	48·5	39·7
1883	69	31	·89	·51	·59	48·0	34·8
1884	131	33	2.12	·53	·27	49·2	26·9
1885	56	7	·89	·11	·49	46·9	32·7
1886	122	28	3·01	·43	·89	47·3	33·0
1887	101	34	1·53	·51	·72	47 0	21·1
1888	65	22	·96	·32	·45	46·7	28·1
1889	85	81	1·27	1·18	·64	47·8	25·8
1890	74	24	1·05	·34	·60	47·8	27·0
1891	78	26	1·08	·36	·46	47·2	32·3
1892	84	25	1·14	·34	·50	46·6	34·8
1893	168	52	2·20	·68	·95	50·1	25·7
1894	35	26	·48	·33	·35	48·9	33·3
1895	101	59	1·27	·74	·88	47·3	28·0
1896	**63**	**40**	**·77**	**·49**	**·56**	**48·7**	**31·86**

As in former years by far the larger number of deaths occurred during the 3rd Quarter, as is seen below:—

DEATHS IN ST. HELENS FROM DIARRHŒA.

	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	Mean of 10 years.
January ...	4	0	2	1	2	2	1	0	0	1	
February ...	2	1	0	0	1	3	0	0	0	0	
March ...	2	3	1	0	4	2	2	2	0	0	
1st Quarter ...	8	4	3	1	7	7	3	2	0	1	3·6
April ...	1	2	3	2	1	2	1	0	1	3	
May	1	2	2	0	2	1	5	0	1	2	
June ...	5	1	2	3	4	2	32	0	4	6	
2nd Quarter ...	7	5	7	5	7	5	38	0	6	11	9·1
July	19	4	28	3	4	10	71	5	29	22	
August ...	37	14	23	19	11	29	32	14	39	15	
September ...	23	24	17	26	30	25	21	7	12	9	
3rd Quarter ...	79	42	68	48	45	64	124	26	80	46	62·2
October ...	3	10	3	15	13	4	2	8	12	3	
November ...	4	3	2	4	5	3	1	1	3	1	
December ...	0	1	2	1	1	1	0	1	0	1	
4th Quarter ...	7	14	7	20	19	8	3	10	15	5	10·8
Total each year	101	65	85	74	78	84	168	38	101	63	85·7

The ages at death of the 63 persons who died of Diarrhœa during 1896 are shown in the following Table, as well as the similar returns for the 5 previous years.

AGE.	1891	1892	1893	1894	1895	1896	Total.
0 to 3 months ...	18	14	34	8	19	7	100
3 „ 6 „ ...	16	13	36	5	19	16	105
6 „ 12 „ ...	20	31	41	17	26	23	158
1 „ 2 years ...	13	14	35	4	33	7	106
2 „ 3 „ ...	—	4	10	—	2	2	18
3 „ 4 „ ...	—	—	—	—	—	1	1
4 „ 5 „ ...	—	—	1	—	1	—	2
Over 5 „ ..	11	8	11	4	1	7	42
Totals ...	78	84	168	38	101	63	532

Out of the 532 persons who died during these six years, over 86 per cent. were under 2 years of age.

The different Wards in which the cases occurred, are shown in the following Table :—

	1891	1892	1893	1894	1895	1896	Total
Eccleston, North ...	13	11	32	9	18	10	93
Eccleston, South ...	5	6	14	4	7	5	41
Central	13	10	20	2	18	10	73
Windle, North ...	5	6	8	2	9	5	35
Windle, South ...	6	19	29	5	11	8	78
Hardshaw ...	9	8	12	5	11	13	58
Sutton, East ...	5	2	8	4	5	2	26
Sutton, West ...	9	11	23	3	11	5	62
Parr	13	11	22	4	11	5	66
Total ...	78	84	168	38	101	63	532

The following instructions on the feeding of Infants were approved by the Health Committee, having previously been submitted for the approval of the St. Helens Medical Society. An arrangement was made by which a copy should be given to each person registering the birth of a child.

HOW INFANTS SHOULD BE FED.

The Instructions given below are only to be acted on when no directions have been given by a Medical Man.

1.—Infants should be *fed at the breast alone for a period of not less than 6 months or more than 10 months.* Any other form of milk should not be given, except on the advice of a medical man. In St. Helens, some hundreds of infant lives would probably be spared every year were this instruction always acted on.

2.—Infants should have the breast during the first 3 months, not oftener than every two hours during the day, and every four hours during the night. At the end of 3 months they should be suckled at longer intervals. When they are fretful or suffer from indigestion, it will often be found that they are being overfed, and diminishing their diet will put them right.

3.—The mother should, in order to supply wholesome milk to her child, partake only of plain and wholesome food, avoiding absolutely alcoholic stimulants, condiments, etc., and should lead a healthful life. If she suffer from sore nipples, they should be washed with warm water after every time the child has been fed, and glycerine or methylated spirit should then be applied to them.

4.—When from want of milk or other absolutely necessary cause, a mother cannot suckle her infant, she should feed it on fresh cow's milk, prepared thus:—

(a)—Diet up to age of 6 Weeks.—Half-a-pint of good fresh milk and one pint of water, with a small teaspoonful of white sugar, are mixed and boiled, and then placed in a clean jug, covered with a clean cloth. Four tablespoonfuls of this should be placed in the feeding bottle each time it is used ; and after each time the child has been fed, the bottle should be most thoroughly cleaned. The infant should not be fed oftener than every two hours during the day, and every four hours during the night.

(b)—Diet for a Child 6 Weeks to 3 Months old.—The milk may be gradually made stronger until one pint of cow's milk is added to one pint of water, and boiled and treated as above. The amount at each feeding should be increased until 8 tablespoonfuls are put into each bottle ; the interval between the meals being also increased.

(c)—Diet for Child 3 to 6 Months old.—The strength of the Milk may be increased until Two Pints of Cow's Milk are mixed with One Pint of Water, boiled and treated as above. About 8 Tablespoonfuls should be given at each meal. The quantity however and the interval between the meals are to be increased as occasion requires, but it is necessary always to bear in mind the danger of overfeeding.

N.B.—Up to the age of 6 Months it will generally be found better to use no other food than Milk. On no account should Bread and Water or other Solids be given.

(d)—**The Bottle used should be that known as the Boat-shaped bottle. Bottles having a tube cannot be efficiently cleansed. The Bottle should be cleaned with water containing Soda, the Teat should be turned inside out and also cleansed.**

5.—In one of the Manchester Health Lectures for 1881-82 on Infant Feeding (price 1d.) the following Diets are given as useful :—

(a)—Diet from 6 Months to 12 Months old.—Five Meals a day.—First Meal 7 a.m. One Teaspoonful of some farinaceous food to about 12 Tablespoonfuls of Sweetened Milk, mixed and well boiled. Second Meal, 11 a.m., the same quantity of Pure Milk. Third Meal, 1-30 p.m., same as first. Fourth Meal, 5-30 p.m., same as second. Fifth Meal, 10 p.m. same as first.

(b)—Diet for a Child from 12 to 18 Months Old.—First Meal, 7 a.m , Bread and Milk or Oatmeal, or Hominy Porridge with plenty of Milk. Second Meal, 11 a m., Twelve Tablespoonfuls of Milk. Third Meal, 1-30 p.m., Bread Crumbs and Gravy, or a slackly-boiled Egg and Bread and Butter. Fourth Meal, 5-30 p.m., Bread and Milk. Fifth Meal, Milk to drink.

6.—Infants should not be placed on the floor, as they are thus exposed to draughts and infectious dirt.

7.—They should be warmly clothed, but not with many clothes, Their clothing should not fit tight about the body, but cling loosely, so as to give free play to the lungs. The limbs should be covered equally with the body.

8.—Mothers are strongly warned against giving children teething powders, or soothing medicines to send them to sleep.

9.—When an Infant continues to suffer from Indigestion or Diarrhœa, in spite of every care in feeding, the mother should consult a medical man, who will advise her how to act.

10.—It cannot be too strongly impressed upon mothers that young infants can be much more easily prevented from disease by careful dieting and management than they can be cured when disease actually occurs.

JOHN ROBERTSON,
Medical Officer of Health.

Medical Officer's Department,
Town Hall, St. Helens.

Of the 63 persons who died from Diarrhœa during 1896, 7 were under 3 months, and 16 between 3 and 6 months old.

Particulars were obtained as to the method of feeding these children, as follows :—

Of those under 3 months who died, 85 per cent. were found to have been bottle-fed infants, and 15 per cent. breast-fed.

Of those between 3 and 6 months old who died, 75 per cent. were bottle-fed and 25 per cent. breast-fed.

In the case of those children who died in 1893, 1894, aud 1895, it was found that—

I. Of Children under 3 months old { 85·16 per cent. of deaths were of Children who were "Bottle-fed." / 14·8 per cent. were "Breast-fed.

II. Of Children between 3 & 6 months { 85·6 per cent. were "Bottle-fed" / 14·4 per cent. were "Breast-fed."

MINOR ZYMOTICS.

INFLUENZA.

Seven deaths were due to this disease in 1896. All of the deaths were of persons between 35 and 85 years of age. In the previous years the deaths were—

Year.	1889	1890	1891	1892	1893	1894	1895	1896
Deaths from Influenza...	0	3	32	19	3	7	8	7

ERYSIPELAS.

Erysipelas caused 4 deaths among the 137 cases of sickness from this disease which were notified during the year.

The cases of sickness were distributed over the Borough as follows :—

WARDS.	1890	1891	1892	1893	1894	1895	1896	Totals.
Eccleston, North	6	10	10	11	8	6	9	60
Eccleston, South	3	3	7	9	6	5	9	42
Central	7	6	9	12	6	3	6	49
Windle, North	4	4	4	5	12	12	15	56
Windle, South	4	8	8	10	4	3	14	51
Hardshaw	4	5	13	8	11	15	33	89
Sutton, East	6	9	6	16	12	5	18	72
Sutton, West	3	9	8	8	7	6	12	53
Parr	5	4	11	19	9	14	21	83
Total cases of Sickness ...	42	58	76	98	75	69	137	555
Total No. of Deaths in each year	5	2	5	2	2	1	4	21

The percentage mortality was therefore 2·9% during 1896. During the previous six years it was at the rate of 4·06%.

What the exact cause of the increased prevalence of Erysipelas during 1896 was, is difficult to arrive at.

Comparing the notified cases of Erysipelas, Scarlet Fever, and Puerperal Fever during each month of the year, the following figures are obtained.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Erysipelas	14	12	13	11	10	5	15	6	5	9	20	17	137
Scarlatina	32	53	38	41	80	87	78	105	126	249	220	201	1310
Puerperal Fever ..	1	1	1	2	1	0	0	1	0	1	0	3	11

It has been said that the Erysipelas organism may be remotely, and perhaps very indirectly, related to that producing Scarlet Fever, it would, if such were the case, be expected that the monthly number of cases would relatively agree, but this is found not to be the case.

Of the 137 cases of Erysipelas, 77 were in females and 60 in males.

In a considerable number of the cases, there was a history of one or more previous attacks of the same disease.

PUERPERAL FEVER.

Until some general agreement is come to as to what diseases are to be notified under the title of Puerperal Fever, the annual statistics on the subject must be misleading.

There were only eleven cases notified during 1896; as compared with an average of 17 during the previous six years.

The small number of cases notified during the year is interesting, in view of the fact that in St. Helens it is generally regarded that women during the puerperium are specially liable to contract Puerperal Fever if exposed to the infection of Scarlet Fever. During 1896, Scarlet Fever was epidemic during the whole year, yet Puerperal Fever cases were below the average.

The following shows the notified cases and deaths during the past seven years:—

	1890	1891	1892	1893	1894	1895	1896
Cases of Sickness ...	11	16	14	19	26	17	11
Deaths	6	15	7	10	6	9	7
*No. of Births to each Death	462	194	416	302	480	351	434

* This does not include Still Births, Abortions, &c., which are followed by Puerperal Fever occasionally.

BOROUGH SANATORIUM,

A larger number of cases were treated at this Institution than in any previous year.

The experience gained since the erection of the two new pavilions in 1894 has pointed most conclusively to the usefulness of such a hospital when it is a reasonably comfortable building, and with a competent nursing staff. The inhabitants have come to realise that they may send their children and relatives there when suffering from infectious disease, with a knowledge that they will be well looked after. It is possible, and even extremely probable, that a large amount of Scarlet Fever might have been prevented during the latter part of 1895 and the early part of 1896 had there been a larger accommodation at the Sanatorium. For a considerable part of 1896 the whole accommodation was occupied by Scarlet Fever patients, to the exclusion of those suffering from Typhoid Fever, Diphtheria, &c. During the whole year the hospital was full, and scarcely a week passed without one or more patients being refused admission. This occurred in the case of many patients whose surroundings were such as to make their removal a most necessary step in the prevention of the spread of infection. So many cases of Scarlet Fever were notified during 1896 that the actual percentage of infectious disease cases treated at the Sanatorium was lower than in previous years.

The following shows the percentage of the notifiable infectious diseases treated in the Sanatorium :—

1890	...	8·4	per cent.	admitted	to the Sanatorium.
1891	...	18·4	,,	,,	,,
1892	...	17·1	,,	,,	,,
1893	...	18·65	,,	,,	,,
1894	...	22·50	,,	,,	,,
1895	...	40·21	,,	,,	,,
1896	...	**18·3**	,,	,,	,,

The following table gives the yearly number of admissions, &c., since the Sanatorium was opened in 1881 :—

Year.	No. remaining in Sanatorium on Dec. 31st.	Number Admitted.	No. who died in Sanatorium.	Total Days in Sanatorium of Patient.	Accommodation.
1882	—	9	3	—	Rooms in Peasley Vale, used as Wards and for Administrative purposes.
1883	—	14	1	—	
1884	—	36	6	—	
1885	—	9	0	—	
1886	—	17	3	—	
1887	—	38	11	—	
1888	—	25	4	—	
1889	—	116*	15	—	
1890	—	128†	20	—	Outbuildings converted into three Wards.
1891	—	89	10	—	
1892	—	134	15	—	
1893	—	150	25	—	
1894	19	182	22	6184	
1895	44	259	54	8962	2 New Pavilions used in addition to above.
1896	—	**311**	**15**	**16630**	

* Enteric Fever Epidemic. † Scarlet Fever Epidemic.

Four of the above 311 patients were admitted from Haydock.

Cases admitted during 1896.	Males.	Females.	Totals.	Deaths.	Average Duration of Cases in Sanatorium 1896.
					Days
Small Pox	0	0	0	0	0·0
Scarlet Fever	142	134	276	9	49·0
Diphtheria	0	0	0	0	0·0
Enteric Fever	22	10	32	5	32·7
Erysipelas	0	0	0	0	0·0
Puerperal Fever	0	1	1	0	5·0
Other Diseases ... ... (including Observation Cases)	1	1	2	1	5·5
	165	146	311	15	

The following shows the number of cases of each Notifiable Infectious Disease which was treated in the Sanatorium during 1896 :—

Disease.	Total Cases in Borough.	Number of such removed to Sanatorium.
Small Pox	0	0
Scarlet Fever	1310	276
Diphtheria, &c.	82	0
Typhoid Fever	168	30
Puerperal Fever... ..	11	1
Erysipelas	137	0

On November 18th, 1895, a scheme (detailed in last year's Report) for the enlargement of the Sanatorium was agreed upon. The sanction of the Local Government Board for the borrowing of the necessary capital was received in March, 1897. The delay in commencing building operations thus caused has been most vexatious and harmful. This was specially so, as there was no matter of importance in dispute, the scheme originally proposed being sanctioned by the Local Government Board practically without any alteration.

REMOVAL OF PATIENTS AND INFECTED CLOTHING.

No alteration in the procedure in regard to the above was made during the year.

The number of houses which had to be disinfected was very large, and the services of a third disinfector had to be engaged temporarily.

The following shows the work done during the past three years.

	1894	1895	1896
No. of Days on which the Disinfecting Apparatus has been used	154	136	149
No. of Articles Disinfected—			
Beds	428	366	791
Pillows	831	861	1241
Blankets	1261	1791	2144
Other Articles	330	366	619
Clothing	1611	3643	6746
Hospital Clothing	1461	1394	507
Books from Library and Schools...	396	83	388
Total	6318	8474	12436
No. of Journeys of Van for Collection and Delivery	324	351	568
No. of Houses visited	1019	1024	1113

CLASS II.—PARASITIC DISEASES.

Two deaths from "Thrush" in children under four months old occurred during the year—against a similar number in 1895.

CLASS IV.—CONSTITUTIONAL DISEASES.

(*a*)—Rheumatic Fever caused 6 deaths; against 7 in 1895, 10 in 1894, 6 in 1893, 8 in 1892, and 6 in 1891.

(*b*)—Cancer and Malignant Diseases.

The following shows the deaths from this group during the years 1884 to 1896.

1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896
25	20	14	8	22	25	27	37	23	36	36	42	35

Cancers or any Malignant new growths of any organ are included in the above figures. It is probable that the apparent increase since 1891 is due more to methods of classification, and the better recognition of cases than to any real increase of the disease.

(*c*)—Tubercular or Consumptive Diseases.

Under this heading are included Tabes Mesenterica, Tubercular Meningitis, Hydrocephalus, Phthisis, and other Tubercular Diseases.

The following are the number of deaths during each of the past 6 years.

1891	1892	1893	1894	1895	1896
177	160	160	164	179	179

The following shows the distribution of cases.

WARDS.	1891	1892	1893	1894	1895	1896	Totals.	Percentage in each Ward.
Eccleston, North ...	25	18	32	16	25	14	130	12·7
Eccleston, South ...	9	11	15	9	8	15	67	6·5
Central	25	17	11	12	16	19	100	9·8
Windle, North	21	18	6	17	19	26	107	10·5
Windle, South	15	19	13	16	15	11	89	8·7
Hardshaw	38	22	33	24	26	25	168	16·4
Sutton, East	12	18	13	15	22	11	91	8·9
Sutton, West	19*	23*	24*	39*	33*	36*	174*	17·0 *
Parr	13	14	13	16	15	22	93	9·1
Totals	177	160	160	164	179	179	1019	100

* Including Deaths from Tubercular Diseases occurring in Rainhill Asylum.

The mortality from Phthisis during 1896 was at the rate of 1·60 per 1000 of the population; this rate being equal to the mean of the preceding 15 years.

DEATH RATES PER 1000 OF THE POPULATION FROM "PHTHISIS."

Year.	Liverpool *	Manchester *	Salford *	Bootle *	Warrington *	Bolton *	Oldham *	Blackburn *	Burnley *	Rochdale *	Preston *	County of Lancaster	England and Wales	St. Helens
1881	2·33	2·46	2·5	1·92	1·20	1·65	2·3	1·9	1·6	2·3	1·9	2·08	1·82	1·76
1882	2·4	2·41	2·4	2·06	1·76	1·66	2·3	1·8	1·7	2·2	1·8	2·05	1·84	1·66
1883	2·6	2·54	2·7	2·24	1·27	1·81	2·3	1·9	1·7	2·9	2·2	2·14	1·87	1·60
1884	2·3	2·34	2·6	2·37	1·50	1·90	2·6	1·7	1·9	1·9	2·1	2·04	1·81	1·92
1885	2·3	2·34	2·6	2·22	1·47	1·78	2·4	1·3	1·8	1·8	1·9	1·95	1·75	1·58
1886	2·4	2·44	2·6	1·52	1·66	1·69	2·3	1·8	1·4	1·4	1·8	1·93	1·71	1·55
1887	2·2	2·19	2·3	1·86	1·29	1·61	2·0	1·5	1·4	2·1	2·0	1·77	1·59	1·36
1888	2·1	2·14	2·3	1·58	1·18	1·64	1·9	1·5	1·2	1·6	1·8	1·69	1·54	1·44
1889	2·1	2·12	1·9	1·48	1·36	1·38	1·9	1·5	1·0	1·8	1·4	1·64	1·54	1·41
1890	2·2	2·33	2·1	1·84	1·68	1·61	2·0	1·8	1·2	2·1	1·6	1·87	1·68	1·79
1891	2·15	2·20	2·2	2·27	1·47	1·56	1·9	1·3	1·4	2·0	1·7	1·81	1·59	1·93
1892	1·9	2·05	1·9	1·80	1·44	1·32	2·1	1·0	1·7	1·6	1·6	1·64	1·46	1·52
1893	2·3	2·05	1·9	1·92	1·28	1·46	1·9	1·0	1·6	1·5	1·7	1·65	1·46	1·45
1894	2·1	1·97	1·8	1·61	1·19	1·39	1·9	1·1	1·9	1·8	1·4	1·57	1·38	1·41
1895				Not published yet.								1.59	1·39	1·60
1896														1·60
Mean	2·24	2·25	2·27	1·90	1·41	1·60	2·12	1·50	1·53	1·92	1·77	1·84	1·62	1·60

*From information kindly supplied by the Medical Officer of Health.

LOCAL DISEASES.

(*a*)—Diseases of the Nervous System caused 191 deaths; against 178 in 1895, 172 in 1894, 191 in 1893, 187 in 1892, and 226 in 1891.

67 of the above 191 deaths were due to "Convulsions." Of these cases 56 were of children under one year of age.

(*b*)—Diseases of the Respiratory System caused the following number of deaths.

1891	1892	1893	1894	1895	**1896**
568	380	390	302	344	**356**

The Deaths from Bronchitis and Pneumonia are set out in the following table.

	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	**1896**
Bronchitis..	142	212	170	299	210	221	177	219	232	300	243	215	154	164	**171**
Pneumonia...	96	111	104	115	83	103	87	133	172	218	141	147	118	148	**154**

The following figures show the distribution of cases of Bronchitis and Pneumonia over the Borough.

Wards.	Bronchitis.					Pneumonia.				
	1892	1893	1894	1895	**1896**	1892	1893	1894	1895	**1896**
Eccleston, North ...	27	23	31	22	**21**	16	14	5	17	**12**
Eccleston, South ...	10	12	11	15	**18**	10	9	6	13	**14**
Central	36	29	15	18	**22**	12	18	13	8	**12**
Windle, North ...	16	20	10	13	**16**	18	16	11	12	**9**
Windle, South ...	26	20	16	11	**16**	8	8	8	10	**17**
Hardshaw ...	26	42	23	21	**18**	29	23	15	15	**18**
Sutton, East	19	28	9	13	**22**	23	28	22	24	**18**
Sutton, West ...	16	24	22	25	**17**	19	17	24	30	**31**
Parr	24	17	17	26	**21**	18	14	14	19	**23**

Year.	Death Rates from all Repspiratory Diseases per 1,000.	
	All England & Wales	St. Helens.
1882	3·56	3·29
1883	3·67	5·52
1884	3·34	4·51
1885	3·73	6·72
1886	3·64	4·82
1887	3·62	5·31
1888	3·50	4·54
1889	3·30	5·37
1890	4·12	5·78
1891	4·47	7·81
1892	3·96	5·18
1893	3·60	5·17
1894	3·02	3·89
1895	3·47	4·32
1896	—	4·38
Mean	3·64	5·10

Diseases of the Digestive System caused 150 deaths; against 146 in 1895, 115 in 1894, 147 in 1893, and 132 in 1892.

SANITARY STAFF,

This consists of

The Medical Officer of Health.
Chief Inspector of Nuisances ...) These Offices are held
Canal Boats Inspector ... ...) by the Surveyor.
Three Male Assistant Nuisance Inspectors.
One Female ,, ,, ,,
A Meat Inspector.
An Inspector under the Sale of Food and Drugs Act.
One Clerk.
Three Disinfecting Men.

GENERAL SANITARY WORK DURING 1896.

At the fortnightly meetings of the Health Committee a report was presented dealing with the Health Statistics for the previous fortnight, and in these reports special attention was drawn to points requiring consideration.

The following special reports were also submitted during the year:—

March 25, report on Measles and School Attendance.
April 22, ,, Water Entering Big Dam at Taylor Park.
August 31, ,, The British Institute of Public Health Congress.
Sept. 22, ,, Drainage from Cemetery.
Sept. 23, ,, Scarlet Fever Prevalence.
Nov. 9, ,, Typhoid Fever in the Denton's Green District.

WATER SOFTENING WORKS.

Samples have been taken from these Works daily, and tested as to their hardness by the Medical Officer of Health. Each sample is obtained by allowing the softened water to drop for twenty-four hours into a glass vessel. At the end of this time, the contents are well mixed, and the sample taken. In this way a true sample is obtained.

The 3 well waters which go to the Softening Works contain 26, 22, and 18½ degrees of hardness respectively.

	No. of Samples Tested.		Mean Hardness.
January	31	... ...	13·8°
February	29	... ...	13·8°
March	31	... ...	13·7°
April	29	... ...	13·6°
May	31	... ...	13·6°
June	30	... ...	13·3°
July	31	... ...	13 6°
August	31	... ...	13·5°
September	29	... ...	13·4°
October	31	... ...	13 3°
November	30	... ...	13·7°
December	30	... ...	13·8°
	363	Mean for year	13·59°

MILK SUPPLIES.

In the Report for 1895 the importance of clean Milk supplies was dwelt on in detail.

It is satisfactory to be able to record that there is evidence in St. Helens as well as in other towns that dairymen are taking more care to supply clean milk than they formerly did.

On account of Milk being such a good medium for disease germs to grow in, it is necessary to guard it from contamination most carefully.

The total number of Cowkeepers on the Register in St. Helens during 1896 was **50.**

The total amount of accommodation in the shippons belonging to these cowkeepers was for **286** Cows.

13 New Premises were registered during the year.

The number of persons registered as Purveyors of Milk, exclusive of Cowkeepers, was **99.** The premises belonging to many of these are exceedingly unsatisfactory. There is, however, considerable difficulty in improving them under the present regulations.

The following person was Summoned for offences against the Bye-laws in 1896 :—

October 9th.—A milk dealer was fined £4, or one month's imprisonment, for allowing milk to be stored so as to be subjected to the risk of contamination.

PROPERTY UNFIT FOR HUMAN HABITATION.

The following is a list of Houses which have been closed by order of the Sanitary Authority during 1896 (under Bye-law No. 93, with regard to Buildings) :—

March 25	...	5, John-street	Repaired thoroughly and re-opened.
,, ,,	...	9, ,,	Dilapidated Property. Pulled down
,, ,,	...	11, ,,	
,, ,,	...	13, ,,	
,, ,,	...	15, ,,	
,, ,,	...	17, ,,	
October 31	...	38, Hills Moss-road	General Dilapidation. To be repaired.
,, ,,	...	40, ,,	
,, ,,	...	42, ,,	
,, ,,	...	44, ,,	
,, ,,	...	46, ,,	
,, ,,	...	48, ,,	
,, ,,	...	50, ,,	
,, ,,	...	52, ,,	
,, ,,	...	54, ,,	
,, ,,	...	56, ,,	

CANAL BOATS ACTS.

The following is a copy of the Annual Report of the Inspector under this Act to the Local Government Board.

In compliance with section 3 of the Canal Boats Act, 1884, I have to present to you my annual report as to the execution of the Canal Boats Acts, 1877 and 1884, for the year ending 31st December, 1896.

(1) The Corporation of St. Helens have appointed me to be Inspector under the Canal Boats Acts in addition to my duties as Borough Surveyor and Chief Inspector of Nuisances. No special remuneration is made for my duties under the Canal Boats Acts.

(2) The number of boats inspected in 1896 was 20, against 16 in 1895.

(3) Of the 20 boats inspected during the year, two were found to contravene Section 3 of the Acts of 1877, by having no certificate on board. Another was found to contravene Section 7 of the Act of 1884 and Sections 3 and 9 of the Local Government Board regulations, 1878, the lettering not being visible from side of canal. One of the sleeping berths required repairing and the cabin required repainting. Cautions were given in each case, and these were attended to. No other infringements of the Acts occurred during the year.

(4) It was not necessary to take any legal proceedings for infringements.

(5) Nor was it necessary to take any other steps to secure compliance with the Acts or Regulations.

(6) No case of Infectious Disease was discovered on any Canal Boat during the year, nor was any case reported to the Medical Officer of Health.

(7) It was not found necessary to detain any boat for cleansing or disinfection.

(8) No boats are at present on the Register.

(9) No boat was registered during 1896.

I herewith append a table showing the foregoing facts.

I am, gentlemen,

Your obedient servant,

GEO. J. C. BROOM.

BLACK SMOKE NUISANCE.

Sixteen chimneys were "timed" during 1896 for periods lasting from a few minutes to over an hour.

It was considered by the Health Committee that if Black Smoke issued from any chimney for a longer period than five minutes at one time, that a nuisance that was preventable was thereby caused.

Of the 16 observations taken, in 7 Black Smoke was sent out for over five minutes—the longest time being 8 minutes.

In each of these 7 cases the works were communicated with and a reply obtained as to the cause, and an assurance obtained that means were being taken to prevent such from happening again.

The small number of observations during 1896 was due to the time of the Inspectors being largely occupied with Infectious Cases.

SWINE FEVER.

The prevalence of this disease has no very direct bearing on the Public Health, but from the fact that so many pigstyes exist, even in populous areas in St. Helens, it is not uninteresting to note the number of outbreaks from year to year. Again the destruction of the affected animal in the Refuse Destructor at Parr, and the cleansing of the premises, have been carried out by the Health Committee.

The number of outbreaks reported in each of the past six years are as follows:—

1891	1892	1893	1894	1895	1896
57	23	48	10	27	33

OFFENSIVE TRADES.

The following offensive trades are on the register:—

Tripe Boilers	7
Gut Scrapers	1
Manure Manufacturers	2
Soap Boilers	1
Total	11

COMMON LODGING HOUSES.

There are 16 Registered Common Lodging Houses in St. Helens, against 16 in the previous year. These contain 65 Registered Sleeping Rooms, having beds for 252 lodgers.

These have been inspected regularly during the day by the Nuisance Inspectors, and at night by the Police.

SLAUGHTER HOUSES.

There were on December 31st 18 Licensed Private Slaughter Houses, together with the Public Abattoir and 1 Knacker's Premises.

The Licenses of 3 of the above Slaughter Houses have been renewed for one year.

The New Abattoir, opened on November 28th, 1895, has been of great value during the year, and has been taken advantage of in a way that is most satisfactory, as will be seen by the tables shown below.

The following figures show the number of Cattle Beasts killed in the Corporation Slaughter House and in the rest of the Borough :—

Year.	Corporation Slaughter House.	In other Slaughter Houses.
1889	117	2470
1890	276	2429
1891	995	2714
1892	959	2959
1893	1321*	2859
1894	1203*	2847
1895	1226	2026
1896	**1763**	**1634**

* Owing to want of accommodation, butchers had to kill elsewhere who would have killed here.

The following gives the number of Animals Slaughtered in St. Helens during 1896, and six preceding years :—

ANIMALS KILLED.	1890	1891	1892	1893	1894	1895	1896
No. of Beasts killed within the Borough in public and private slaughter houses for market purposes ...	2705	3709	3918	4180	4050	3252	3397
„ Sheep	4335	3923	3370	4264	3614	3177	3372
„ Calves	306	371	369	1281	588	471	459
„ Pigs	1304	774	872	772	3410	3348	7038
„ Lambs	987	1155	1015	1101	871	471	1048
Total	9638	9932	9544	11598	12533	11332	15314
Beasts killed in the Corporation slaughter house, which are included in the above number	276	995	959	1321	1203	1226	*6252

* Including Sheep, Pigs, &c.

Of the 15,314 Animals slaughtered in the Borough, the Meat Inspector was able to examine the carcase and viscera of 9459; in other 1798 he examined the carcase only, and in 3967 he was not able to see either carcase or viscera.

The amount of Meat and other Food Stuff which was seized or given up on account of its being in a diseased condition is shown below. The amount of Meat is in excess of that in former years, and is probably due to a different class of animals being killed since the opening of the Public Abattoir.

Meat and other Articles seized or given up on account of being Unfit for Human Food, during year ending December 31st, 1896.

Butchers' Meat	595 score 17 lbs.
Fish (various)...	4 tons 3 cwts. 30 lbs.
Haddocks	166 boxes.
Kippers	342 boxes.
Herrings	23 barrels.
Tinned Lobsters	149 tins.
Do. Salmon	20 ,,
Prawns...	1 barrel.
Viscera...	33 sets lungs, &c. 5 cwts. pigs' heads. 1 bag beasts' bellies.
Rabbits	94.
Mushrooms	1 basket.
Game Birds	6.

The following prosecutions were instituted for offences during the year:—

1—A man for having 20 tins of putrid salmon exposed for sale. Fined £10 and costs.

2—Against a Confectioner for having 86 tins of lobster deposited for sale. Fined £10 and costs.

3—A Grocer, for having 9 tins of lobster exposed for sale. Fined 5/- and costs.

4—A Grocer, for having 1 tin of lobster exposed for sale. Fined 5/- and costs.

5—Against two Grocers, for having 16 tins of lobster exposed for sale. Dismissed on payment of costs.

6—A Butcher, for having deposited and exposed for sale two pigs. Fined £5 and costs.

7—A Butcher, for having deposited for the purpose of preparation for sale, 1 beast. Fined £15 and costs.

8—Against a Butcher, for having diseased meat exposed for sale. Fined £15 and costs.

9—Against a Tripe Dresser, for having diseased tripe exposed for sale. Fined £5 and costs. And for having diseased tripe deposited for the purpose of preparation for sale. Fined £5 and costs.

REPORT OF PUBLIC ANALYST FOR YEAR 1896.

The following Table shows the work done by the Public Analyst during the year 1896.

Name of Sample Analysed.	Number of Samples Analysed.	Number of such Samples which were found to be genuine.	Number of such Samples which were found to be adulterated.	No. of Cases in which a Summons was taken out.
New Milk	82	78	4	4 { 2 convicted, 1 no action, 1 dismissed
Separated Milk ...	1	1	—	—
Whiskey	6	6	—	—
Butter	30	27	3	3 { 1 dismissed, 2 convicted
Cheese	2	2	—	—
Lard	6	6	—	—
Mustard	2	2	—	—
Coffee	2	2	—	—
Pepper	2	2	—	—
Totals	133	126	7	7—4 convicted

APPENDED IS A TABLE SHOWING THE NUMBER OF SAMPLES SUBMITTED FOR ANALYSIS SINCE 1889, THE NUMBER OF SUCH SAMPLES WHICH WERE ADULTERATED, AND THE PERCENTAGES OF ADULTERATED SAMPLES DURING THE YEAR.

Articles Purchased.	1889		1890		1891		1892		1893		1894		1895		1896	
	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated
Milk	24	4	33	1	30	3	23	2	23	2	25	2	82	8	**82**	**4**
Separated Milk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	**1**	—
Whiskey	19	5	8	1	11	3	9	1	—	—	12	3	6	1	**6**	—
Butter	9	2	14	—	15	3	23	—	6	1	12	2	30	—	**30**	**3**
Bread	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Cream of Tartar	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Coffee	1	—	1	—	—	—	1	—	—	—	—	—	—	—	**2**	—
Cheese	1	—	1	—	1	—	—	—	—	—	—	—	1	—	**2**	—
Vinegar	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocoa	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lard	2	—	3	—	7	—	1	—	—	—	—	—	3	—	**6**	—
Pepper	—	—	2	—	—	—	1	—	—	—	—	—	—	—	**2**	—
Beer	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Mustard	—	—	—	—	—	—	1	—	—	—	—	—	—	—	**2**	—
Paregoric	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—
Tincture of Opium	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Spirits of Nitre	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—
Totals	62	11	62	2	64	9	61	3	29	3	49	7	128	9	**133**	**7**
Percentage of Adulterated Samples—St. Helens	17·7		3 2		14·0		4·9		10 3		14·3		7·03		**5·26**	
Percentage of Adulterated Samples—All England	11 5		11·2		12·2		12·4		12·9		10·3		9·3		Not yet published	
Average Amount of Fine in each Case, exclusive of Costs—St. Helens	s. d. 7 11 5/11		s. d 7 6		s. d. 12 9⅓		s. d. 10 0		s. d 7 6		s. d. 4 7 5/7		s. d. 12 2⅔		£ s. d. **1 5 8 4/7**	
Average Amount of Fine in each Case, exclusive of Costs—England and Wales	£1 7 4		£1 9 0		£1 11 3		£1 16 2		£1 17 11		£1 15 7		£1 15 9		Not yet published	

BAKEHOUSES.

179 Bakehouses were in use during the year, and each of these have been inspected.

3 New Bakehouses were erected during the year, and in each of these cases the Health Committee insisted upon the bakehouse not being used as a scullery or washhouse as well as a bakehouse.

The following prosecution was instituted during the year :—

March 31st—A Baker was fined £2 and costs for not limewashing bakehouse, and an order was made to limewash immediately.

WORKSHOPS.

The number of Registered Workshops on December 31st, 1896, was **309.** These were visited, but owing to the large number of Scarlet Fever cases as much attention could not be given to these as ought to have been.

NUISANCE INSPECTORS' WORK DURING 1896.

Systematic house-to-house inspections have been carried on during the year by the Assistant Nuisance Inspectors, and the following table gives a list of the numbers of cases in which nuisances were found, and for which notices had to be served.

SANITARY NOTICES.

Number of Sanitary Notices served :—

	1890	1891	1892	1893	1894	1895	1896
To clean Choked Drains or repair Drains...	298	276	357	447	353	303	**230**
„ „ Defective Drains ...	49	26	48	57	86	63	**66**
„ „ Backyards and Passages ...	—	54	11	46	72	30	**18**
„ „ Ditches, Cesspools or Wells ...	—	1	2	5	11	29	**14**
„ provide Slopstones ...	—	—	—	28	61	13	**4**
„ „ Privy, Ashpit, and Pail Closet Doors	40	157	179	59	306	258	**170**
„ „ Trapped Gullies ...	61	77	91	28	1	21	**11**
„ „ Down Spouts and Eave Spouts ...	—	—	37	14	83	0	**42**
„ „ Ventilation Pipes to w.c. ..	—	—	—	19	7	4	**1**
„ repair Down Spouts and Eave Spouts ...	—	11	39	93	126	182	**75**
„ „ w.c.'s, Baths, and Basins ...	—	—	—	43	11	18	**2**
„ „ Ashpit, Privy, Dwelling-house, and Pantry Roofs	15	150	115	142	272	258	**108**

To repair Backyards	89	239	291	252	193	94	69
,, drain Dwelling-houses ...	—	—	—	17	2	25	7
,, provide, or disconnect, or lengthen Slop-stone Pipes ...	17	101	148	144	133	55	52
,, provide, or disconnect, or lengthen Down Spouts ...	—	29	2	—	—	—	8
,, rehang Privy or Ashpit Doors	—	42	49	92	2	—	—
,, remove Pigs	2	21	14	39	37	27	28
,, ,, Manure	42	—	16	5	29	15	17
,, ,, Rubbish	—	—	17	16	18	25	18
,, Overcrowding	27	—	37	26	56	153	33
,, Miscellaneous	184	246	396	389	229	206	207
Foul Ashpits to be reconstructed to Tub and Pail and No. 2 System	435	117	192	196	487	39	—
To provide w.c.'s	—	—	—	3	—	4	—
,, ,, Ashboxes... ...	—	—	—	—	194	179	340
,, repair Privies and Ashpits	—	—	—	—	96	21	8
,, clean and limewash dwelling-house ...	—	—	—	—	18	42	3
,, remove Fowls from dwelling-house ...	—	—	—	—	—	11	12
,, cleanse dwelling-houses or cellars	—	—	—	—	—	—	28
,, remedy defects in cow-sheds	—	—	—	—	—	—	8
	1259	1560	2041	2157	2820	2065	1579

REMOVAL OF EXCRETA.

Prior to 1884 all houses, with few exceptions, were on the privy midden system. Since 1884 the number of houses put on the Tub and Pail System are detailed in the accompanying table :—

Tub and Pail System.	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	Total.
Old System	49	...	..	...	..	...	...	..	...	...	...	..	..	..	49
New Houses	...	97	180	352	307	338	349	275	221	268	347	277	175	104	3290
Converted Privies & Ashpits..	...	161	526	380	328	415	602	435	117	192	196	487	358	14	4211
	49	258	706	732	635	753	951	710	338	460	543	764	533	118	7650

On the 2nd day of December, 1896, the following resolution was passed by the Council :—

> "Resolved that in the future all new buildings be required to be put upon the Water Carriage System, except when the Committee, upon consideration of the circumstances of a particular case, otherwise direct."

This resolution will have a very important bearing on the Public Health of St. Helens during the coming years.

WEEKLY RECORD OF METEOROLOGICAL CONDITIONS TAKEN AT VICTORIA PARK.

WEEK ENDING.	Barometer.	Maximum Temp.	Minimum Temp.	Mean Temp.	Mean Soil Temp. (4 feet.)	Rainfall (total in.)	WIND. Number of days in each direction.								
							N	NE	E	SE	S	SW	W	NW	Calm
January 4 ..	29·891	54·1	32·0	45·8	43·2	·415	..	..	1	..	..	5	..	1	..
,, 11 ..	30·645	45·4	30·0	36·7	43·7	·0	1	1	..	2	..	1	..	2	..
,, 18 ..	29·795	50·9	33·0	43·0	43·3	·495	..	1	..	..	..	..	4	2	..
,, 25 ..	30·091	50·8	26·0	37·8	43·1	·27	..	..	..	5	..	1	1	..	.
February 1 ..	30·443	52·8	35·0	43·2	42·9	·185	..	..	..	..	..	1	1	4	1
,, 8 ...	30·344	51·9	31·0	40·8	42·9	·095	..	..	..	6	..	..	1	..	..
,, 15 ..	30·253	55·4	35·4	44·7	42 9	·11	1	..	..	2	..	1	2	1	...
,, 22 ..	29·987	51·6	27·0	39·3	43·0	·335	..	..	..	7	..	..	..	..	..
,, 29 ..	30·125	48·7	26·3	36·4	42·6	·70	..	..	..	5	..	..	1	1	..
March 7 ..	29·214	51·6	35·8	43·6	42·4	1·045	..	..	..	..	..	..	5	2	..
,, 14 ..	29·744	52·1	32·0	43·0	42·8	·715	..	..	1	1	..	2	2	1	..
,, 21 ..	29·606	53·0	28·3	43·2	43·1	·660	..	..	..	3	1	1	2	..	..
,, 28 ..	29·733	56·6	35·0	45·5	43·2	1·070	..	..	..	2	1	..	1	2	1
April 4 ..	30·027	52·0	31·0	41·3	43·5	·14	..	3	..	..	..	..	..	4	..
,, 11 ..	30·100	57·9	40·7	48·7	43·9	·255	..	..	..	..	..	..	..	7	..
, 18 ..	29·999	53·9	36·2	45·3	44·4	·40	1	..	..	1	1	..	..	4	..
, 25 ..	30·247	63·0	36·5	50·0	44·8	·09	..	2	..	1	..	..	..	4	..
May 2 ..	29·919	59·5	35·1	48·9	45·7	·46	..	1	..	..	..	..	5	1	..
,, 9 ..	30·316	66·5	35·7	51·6	46·4	·0	..	..	4	1	..	..	..	2	..
,, 16 ..	30·238	66·3	45·0	58·2	47 6	·R	..	1	3	1	..	..	..	2	..
,, 23 ..	30·017	70·0	34·0	52·8	49·1	·46	..	..	..	1	..	..	1	5	..
,, 30 ..	30·296	67·0	40·0	53·2	50·1	·0	..	..	4	1	..	..	..	3	..
June 6 ..	29·802	71·9	40·7	58·6	51·3	1·54	..	2	..	2	..	..	2	1	..
,, 13 ..	29·719	72·0	49·3	59·5	52·3	·295	..	1	2	3	..	..	1	..	..
,, 20 ..	29·918	84·4	50·3	65·4	53·8	·770	..	..	..	3	..	1	3	..	..
,, 27 ..	30·059	66·5	46·5	58·0	54·9	·615	..	..	1	..	..	..	2	4	..
July 4 ..	29·949	67·2	49·4	57·7	55·2	·685	..	1	..	..	..	..	2	4	..
,, 11 ..	29·982	75·7	48·1	61·1	55·2	·55	..	..	1	1	1	2	..	2	..
18 ..	30·140	75·6	43·0	59·9	55·9	·0	..	2	..	..	1	1	1	2	..
, 25 ..	29·870	75·4	49·8	60·9	56·8	1·14	..	..	..	1	1	3	..	2	..
August 1 ..	29·858	71·4	45·6	58 5	57·0	·22	..	..	..	3	..	1	1	2	..
,, 8 ..	30·045	68·8	46·1	56·1	56·7	·15	..	2	..	1	1	..	..	3	..
,, 15 ..	30·079	67·7	49·2	58·4	56·0	·27	..	1	..	..	..	..	1	5	..
,, 22 ..	29·924	68·2	45·2	7·1	56·0	·545	..	..	..	1	..	..	3	3	..
,, 29 ..	29·857	64·8	43·7	55·8	56·0	2·030	1	..	..	..	..	1	3	2	..
September 5 ..	29·786	65·3	51·0	58·3	55·6	1·125	1	..	1	1	..	1	..	2	1
,, 12 ..	29·741	68·2	48·0	58·3	55·4	·89	..	1	1	5	..	..	..	..	..
,, 19 ..	29·573	67·0	49·0	56·6	55·2	1·10	..	..	..	1	..	4	2	..	..
,, 26 ..	29·363	63·5	38·3	52·0	54·5	1·535	..	1	..	1	..	2	1	2	..
October 3 ..	29·956	63·4	39·1	52·9	53·7	·87	..	..	..	1	..	4	..	2	..
,, 10 ..	29·416	60·4	41·0	48·7	52·9	1·89	..	..	..	..	..	5	..	2	..
,, 17 ..	30·012	57·3	32·2	45·1	51·8	·67	..	6	..	..	..	..	..	1	..
,, 24 ..	29·368	51·1	29·8	40·1	50·6	·78	..	3	..	..	..	1	1	2	..
,, 31 ..	29·484	49·0	27·1	38 3	49 0	·53	..	3	..	..	..	2	..	..	2
November 7 ..	30·048	48·4	23·0	36·2	47·4	·57	..	2	..	..	..	1	..	1	3
,, 14 ..	29·928	50·8	29 3	40·3	46·1	·355	1	..	..	2	..	1	1	1	1
,, 21 ..	29·825	47·8	27·3	39 4	45·5	·540	..	..	..	2	..	1	2	1	1
,, 28 ..	30·357	49·7	33·0	42·9	45·0	·0	..	..	3	1	..	1	..	1	1
December 5 ..	29·583	38 0	28·3	39·0	44·7	·57	..	..	1	4	..	1	..	..	1
,, 12 ..	29·356	50·3	33·2	41·3	44·3	·855	..	..	2	3	..	..	..	2	..
,, 19 ..	29·526	44·6	29·0	35·2	44·1	·30	..	4	..	..	..	1	..	1	1
,, 26 ..	30·007	49·3	24·8	34·5	43·2	·795	..	..	1	3	..	2	..	1	..
TOTALS						30·085	6	38	26	77	7	48	52	97	13
MEANS	29·912	57·3	37·1	48·4	48·6										

RAINFALL

AT ECCLESTON HILL WATERWORKS FOR 30 YEARS.

	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876
January ..	1·28	2·38	1·78	2·40	·50	*	2·54	2·78	*	1·70
February ..	2·08	1·91	3·12	·60	·84	*	·27	·62	*	3·60
March ..	1·04	3·41	1·47	1·94	·84	4·69	1·46	2·02	·63	2·34
April ..	3·61	1·94	2·31	1·47	2·42	2·94	1·88	1·01	·34	3·25
May ..	1·60	1·74	4·04	1·07	1·45	1·27	1·85	1·44	2·30	·42
June ..	·96	·36	1·28	1·47	2·84	5·56	1·69	·96	3·80	2·61
July ..	4·70	·47	1·18	·81	4·07	7·46	3·53	2·65	3·26	2·74
August ..	1·78	4·47	2·27	1·96	1·53	2·72	3·01	3·24	3·35	3·50
September ..	2·39	2·01	6·49	2·99	2·93	7·03	1·52	2·43	5·65	3·96
October ..	3·10	4·40	3·07	7·31	4·81	5·40	4·24	4·26	5·81	2·90
November ..	·81	2·15	3·61	2·76	1·08	2·73	2·31	4·50	4·10	4·96
December ..	4·29	7·08	3·13	2·79	·02	3·97	·88	1·51	·78	4·38
Totals ..	27·64	32·32	33·75	27·59	23·33	43·77	25·18	27·42	30·02	36·36

* Gauge broken.

	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886
January ..	1·70	3·54	*	·49	·08	2·72	2·58	3·51	1·78	3·99
February ..	4·50	1·77	*	·80	4·17	1·73	3·38	2·33	2·35	0·80
March ..	2·43	1·13	1·42	1·37	2·41	2·15	·53	2·49	1·94	1·84
April ..	3·13	2·20	1·14	·66	1·23	4·06	1·09	1·07	1·38	1·12
May ..	2·69	4·34	1·58	1·90	3·35	1·71	·68	0·82	2·14	4·25
June ..	1·07	3·32	3·10	2·15	2·60	6·07	2·90	2·11	3·32	1·68
July ..	5·32	1·40	4·53	5·82	3·47	5·27	3·32	3·30	1·91	3·03
August ..	6·16	4·87	5·15	2·38	6·60	4·41	2·25	2·02	1·98	1·74
September ..	3·01	5·06	3·77	2·90	2·46	3·10	6·41	3·09	4·58	3·47
October ..	3·46	3·94	2·07	3·13	3·14	3·00	5·81	1·49	5·99	4·05
November ..	2·50	3·94	·64	2·03	2·91	3·43	2·60	1·57	3·18	3·04
December ..	2·90	*	·61	6·16	4·30	2·12	1·65	3·12	2·18	4·00
Totals ..	38·87	35·51	24·37	29·79	36·72	39·77	33·20	26·92	32·73	33·01

* Gauge broken.

	1887	1888	1889	1890	1891	1892	1893	1894	1895	1897
January ..	0·98	0·93	0·65	3·17	1·01	1·80	0·89	1·87	2·06	1·13
February ..	0·61	0·61	1·53	0·19	0·08	1·54	3·07	4·02	0·04*	1·54
March ..	1·33	1·89	1·27	2·28	0·76	0·73	0·77	2·21	0·89	2·94
April ..	1·06	1·09	1·92	1·31	1·95	1·15	0·39	1·59	1·74	1·48
May ..	2·03	0·66	2·47	1·58	2·13	3·36	1·30	2·48	0·54	0·51
June ..	0·91	2·54	0·35	2·27	3·39	4·08	1·74	2·23	0·82	3·83
July ..	1·17	6·87	2·98	2·43	3·26	3·20	3·32	3·66	3·72	1·92
August ..	1·50	3·31	4·75	3·67	6·50	4·15	2·79	4·77	3·31	3·18
September ..	5·36	1·56	2·25	1·48	2·92	3·80	3·85	0·72	1·17	6·28
October ..	2·37	1·85	2·84	2·09	3·49	6·25	2·18	3·79	5·13	3·18
November ..	1·17	4·98	2·49	6·41	2·92	2·44	1·88	2·56	2·65	1·31
December ..	2·61	1·89	2·39	0·14	3·93	1·96	3·55	3·44	2·88	4·56
Totals ..	21·10	28·18	25·89	27·02	32·34	34·84	25·73	33·34	25·35	31·86

* Rain Gauge out of order.

APPENDIX A.

Showing the work done during 1896 in the erection of Buildings and the Paving and Sewering of Streets and Passages.

This information is supplied by

MR. GEO. J. C. BROOM, M.I.C.E.

Plans Deposited and Approved by the Health Committee.

	1890	1891	1892	1893	1894	1895	1896
For Dwelling-houses...	285	238	401	563	310	253	**310**
„ Other Buildlngs...	90	66	47	35	45	24	**31**
„ Alterations to Existing Buildings ...	47	49	29	59	73	48	**44**
Total ...	422	353	477	657	438	325	**385**

The following table shows the several Wards of the Borough in which Buildings have been erected during the years mentioned :—

Year.	North Eccleston.	South Eccleston.	North Windle.	South Windle.	East Sutton.	West Sutton.	Central.	Hardshaw.	Parr.	Total.
1895	22	49	49	4	5	32	—	16	24	202
1896	**15**	**63**	**57**	**12**	**6**	**36**	—	**12**	**43**	**244**

PASSAGES.

Sewering, Levelling, Paving, and Channelling.

Passage rear of Nos. 60—70, Campbell-street.
,, ,, Prescot-road.
,, ,, Nos. 2—28, West-street, and Nos. 21—39, Bewsey-street.
,, between Fir-street and Springfield-row.
,, behind Nos. 35 to 91, Junction-lane.
,, between Junction-lane, Pecker's Hill-road, and Prescot-street.

Sewering and Draining.

Passage behind Nos. 304—344, Park-road.

STREETS.

Sewering and Draining.

Atlas-street (portion of).
Sandy-lane.

Sewering, Levelling, Paving, Flagging, and Channelling.

Crispin-street.
Fir-street.
Prospect-road.

Levelling, Paving, Flagging, and Channelling.

Wolseley-road (Granite)
Windleshaw-road.
Grecnfield-road.
Rivington-street.
Tennis-street.
Carr-street.
Hammill-street.

FOOTPATHS.

Paving, Flagging, and Channelling.

Chancery-lane.
North-road.

PUBLIC HIGHWAYS.

Granite Paving.

Duke-street.
Cooper-street (portion of).

Table D.

MORTALITY STATISTICS for Year ending December 31st, 1896, showing Age at Death, and Ward,

DISEASES.	AGES AT DEATH.																	WARDS.									
	0 to 3 ms	3 to 6 ms	6 to 12 ms	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs	4 to 5 yrs	5 to 10 yrs	10 to 15 yrs	15 to 20 yrs	20 to 25 yrs	25 to 35 yrs	35 to 45 yrs	45 to 55 yrs	55 to 65 yrs	65 to 75 yrs	75 to 85 yrs	Upwards of 85 years	Eccleston North	Eccleston South	Central	Windle North	Windle South	Hardshaw	Sutton East	Sutton West	Parr	Whole Borough
Zymotic Diseases																												
(*a*) Miasmatic Diseases																												
Small Pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	..	..	7	14	11	3	3	..	..	..	..	..	..	..	..	..	..	..	9	..	4	1	1	2	1	1	19	38
Scarlet Fever	..	2	3	6	10	13	4	16	2	2	..	1	..	..	..	..	..	..	6	6	7	0	9	8	6	11	6	59
Typhus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whooping Cough	..	7	5	22	30	5	6	2	1	..	..	..	..	..	..	..	..	..	20	5	11	11	8	1	13	3	6	78
Diphtheria	..	1	1	2	4	3	4	1	1	..	..	..	..	..	..	..	..	..	1	..	1	3	1	3	1	2	5	17
Simple, Continued, or Ill-Defined Fever.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric Fever	..	..	..	..	..	1	1	5	1	4	5	13	7	..	3	..	..	..	4	2	3	7	3	4	2	10	5	40
Influenza	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	3	1	..	..	..	1	1	2	2	1	..	..	7
Other Miasmatic Diseases	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
(*b*) Diarrhœal Diseases																												
Simple Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhœa	7	16	23	7	2	1	..	..	..	..	1	..	1	1	2	2	..	..	10	5	10	5	8	13	2	5	5	63
Dysentery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Malarial Diseases																												
Remittent Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ague	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
(*d*) Zoogenous Diseases																												
Cow Pox and Effects of Vaccination	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia, Glanders, & Splenic Fever.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE D.—Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(*e*) Venereal Diseases																												
Syphilis	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	3
Gonorrhea and Stricture, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*f*) Septic Diseases																												
Erysipelas	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	1	..	..	..	..	..	..	1	2	4
Pyaemia and Septicaemia	..	..	..	1	..	1	..	..	1	1	..	2	1	..	..	1	..	..	..	..	..	..	..	2	3	2	1	8
Puerperal Fever	..	..	..	..	..	..	..	..	..	..	1	3	3	..	..	..	..	..	..	..	..	..	2	..	2	3	..	7
Parasitic Diseases																												
Thrush and other Vegetable Parasites	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	2
Worms, Hydatids, & Animal Parasites	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dietic Diseases																												
Want of Breast Milk	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2
Scurvy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chronic Alchoholism	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Delirium Tremens	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Constitutioal Diseases																												
Rheumatic Fever & Rheumatism of Heart	..	..	..	..	..	..	..	1	..	..	..	2	1	2	..	..	..	..	..	1	1	1	..	1	1	..	1	6
Rheumatism	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	1	..	..	..	1	..	..	1	1	..	1	4
Gout	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rickets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cancer and Malignant Diseases	..	..	..	..	..	..	..	..	..	..	1	2	7	8	9	7	1	..	3	2	2	3	3	4	7	9	2	35
Tabes Mesenterica	2	6	10	8	1	1	..	..	..	..	1	..	..	..	..	..	..	..	6	5	3	3	1	3	1	3	4	29
Tubercular Meningitis	..	1	2	3	3	..	..	3	..	..	..	..	..	1	..	..	..	..	2	2	..	3	1	..	2	1	2	13
Hydrocephalus	..	..	6	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	3	..	..	1	1	7
Phthisis	..	..	1	9	2	..	1	3	6	9	16	29	30	17	6	1	..	..	6	6	16	20	6	22	8	31	15	130
Scrofula and other Tubercular Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Purpura	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Anœmia, Chlorosis	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2
Diabetes	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	3	..	..	..	..	..	2	2	..	..	..	..	4
Other Constitutional Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE D.—Continued.

DISEASES.	AGES AT DEATH.																		WARDS.								
	0 to 3 ms	3 to 6 ms	6 to 12 ms	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs	4 to 5 yrs	5 to 10 yrs	10 to 15 yrs	15 to 20 yrs	20 to 25 yrs	25 to 35 yrs	35 to 45 yrs	45 to 55 yrs	55 to 65 yrs	65 to 75 yrs	75 to 85 yrs	Upwards of 85 years.	Eccleston North.	Eccleston South.	Central.	Windle North.	Windle South.	Hardshaw.	Sutton East.	Sutton West.	Parr.	Whole Borough.
Developmental Diseases.																												
Premature Birth	59	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	2	2	4	6	9	3	8	12	59
Congenital Malformation	9	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	1	2	1	3	2	1	..	..	12
Old Age	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	11	9	1	2	..	7	4	2	2	1	6	1	25
Local Diseases.																												
(*a*) Nervous Diseases																												
1. Inflammation of Brain or Membranes.	..	..	3	3	4	2	1	4	1	1	1	..	2	..	..	..	..	..	3	1	3	3	1	2	4	5	..	22
2. Apoplexy, Softening of Brain	..	..	..	..	..	..	..	..	..	..	..	..	3	3	8	14	6	..	4	1	3	7	4	2	4	6	3	34
3. Insanity	..	..	..	..	..	..	..	..	..	..	..	12	16	13	5	1	..	..	2	1	1	..	1	..	..	42	..	47
4. Epilepsy	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	..	1	..	1	..	..	..	..	1	..	3
5. Convulsions	38	9	9	3	3	3	1	1	..	..	..	..	..	..	..	..	..	..	7	6	5	6	13	10	6	6	8	67
6. Laryngismus St.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7. Diseases of Spinal Cord, P. A. and Paraplegia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1
8. Other Diseases of Nervous System	..	..	1	1	..	1	..	2	..	1	..	1	3	5	1	1	..	..	2	1	..	2	2	1	1	6	2	17
(*b*) Diseases of Special Sense																												
Eye, Ear, and Nose	..	1	2	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	2	1	1	..	6
(*c*) Diseases of Respiratory System																												
Laryngitis	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Croup	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	2
Emphysema and Asthma	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	1	..	..	..	2
Bronchitis	14	5	28	16	2	1	..	1	..	1	2	2	9	18	27	24	20	1	21	18	22	16	16	18	22	17	21	171
Pneumonia	9	5	22	28	12	3	2	6	4	1	..	9	16	14	11	9	3	..	12	14	12	9	17	18	18	31	23	154
Pleurisy	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Other Respiratory Diseases	1	5	5	4	1	..	..	..	..	..	1	2	2	..	3	1	..	..	2	2	5	3	3	3	2	3	2	25
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

TABLE D.—Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(*d*) Diseases of Circulatory System																												
Pericarditis	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Endocarditis acute	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	2	..	..	3
Valvular Diseases of Heart	1	..	..	1	..	..	..	..	..	1	3	3	8	5	9	3	..	..	1	4	4	4	5	5	3	6	2	34
Other Diseases of Heart	2	..	..	1	1	..	..	..	1	..	1	4	..	7	8	6	4	..	4	1	6	4	5	6	..	6	3	35
Aneurism	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Embolism or Thrombosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Diseases of Blood Vessels	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	2	1	..	..	..	1	4
(*e*) Diseases of Digestive System																												
Dentition	..	..	5	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	2	1	..	..	..	..	1	9
Sore Throat, Quinsey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Stomach	7	2	4	3	..	..	1	3	1	..	..	..	..	1	1	..	..	..	3	..	..	3	2	6	1	..	8	23
Enteritis	8	17	16	10	1	3	..	2	1	1	..	1	1	2	1	2	..	..	11	4	6	4	8	7	7	12	7	66
Obstruction Diseases of Intestines	..	..	..	..	1	1	..	3	..	1	..	1	1	1	1	1	..	..	..	2	2	1	1	3	2	..	..	11
Peritonitis	1	..	..	..	..	..	..	1	1	..	1	..	1	1	1	1	..	..	..	..	..	2	2	..	..	1	3	8
Ascites	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cirrhoses of Liver	1	..	..	..	..	..	..	..	..	..	..	1	1	5	1	..	..	..	..	2	1	1	..	4	1	..	..	9
Jaundice and other Diseases of Liver	4	..	..	..	..	..	..	..	1	..	..	..	4	2	3	2	..	..	..	1	5	2	1	2	2	2	1	16
Other Diseases of Digestive System	4	..	..	2	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	2	..	1	..	4	..	8
(*f*) Diseases of Lymphatic System																												
Lymphatics, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*g*) Diseases of other Glands																												
Bronchocele	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Addison's Disease	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1
(*h*) Diseases of Urinary System																												
Nephritis	..	..	..	..	1	1	..	..	..	..	..	1	..	1	1	1	..	..	..	1	..	2	1	1	..	..	1	6
Bright's Diseases, Albuminuria	..	..	..	..	..	..	1	..	..	..	1	3	3	1	5	2	..	..	2	..	2	1	1	3	..	6	1	16
Disease of Bladder and Prostate	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	1	..	..	..	..	1	..	1	..	3
Other Diseases of Urinary System	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE D.—Continued.

DISEASES.	AGES AT DEATH.																		WARDS.								
	0 to 3 ms	3 to 6 ms	6 to 12 ms	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs	4 to 5 yrs	5 to 10 yrs	10 to 15 yrs	15 to 20 yrs	20 to 25 yrs	25 to 35 yrs	35 to 45 yrs	45 to 55 yrs	55 to 65 yrs	65 to 75 yrs	75 to 85 yrs	Upwards of 85 years	Eccleston North	Eccleston South	Central	Windle North	Windle South	Hardshaw	Sutton East	Sutton West	Parr	Whole Borough
(*i*) Diseases of Reproduction System																												
Of Male Organs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Of Female Organs	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Abortion and Miscarriage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Puerperal Convulsions	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Placenta Praevia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Accidents of Childbirth	..	..	..	..	..	..	..	..	..	1	4	4	..	..	..	..	..	..	1	..	..	1	..	..	4	2	1	9
(*k*) Diseases of Bones and Joints																												
Caries and Necrosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Arthritis, Ostitis, Periostitis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1
Other Diseases of Bones and Joints	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*l*) Diseases of Integruments																												
Carbuncle, Phlegmon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Diseases of Integumentary System	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2
Deaths from Violence																												
(*a*) Accident or Negligence																												
Fractures and Contusions	..	..	..	..	1	1	..	2	2	5	1	4	4	5	6	1	..	..	..	1	1	2	..	10	7	5	6	32
Gunshot Wounds	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuts or Stabs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burns or Scalds	..	..	..	..	1	1	2	2	2	..	..	..	..	1	2	..	..	..	1	..	..	1	1	6	2	..	..	11
Poison	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Drowning	..	..	..	..	..	1	..	..	1	..	..	..	1	1	2	..	..	..	..	1	2	..	..	1	..	..	2	6
Suffocation (Gassed)	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	3
Otherwise	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

TABLE D.—Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(*b*) Homicide.																												
Manslaughter	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Murder	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
(*c*) Suicide.																												
Gunshot Wounds	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cut, Stab	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	3	..	..	3
Poison	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Drowning	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2
Hanging	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Otherwise	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Deaths from Ill-Defined and not Specified Causes.																												
Dropsy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Debility-Atrophy	59	8	2	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	14	6	12	13	7	3	1	9	8	73
Marasmus	19	6	5	5	2	1	..	1	..	..	..	..	..	..	..	..	..	..	2	1	1	4	2	7	1	5	16	39
Mortification	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	1	..	..	1	1	1	4
Tumour	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Abscess	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hæmorrhage	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Sudden Death (cause not known)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other causes not specified	1	2	..	..	1	..	..	2	..	..	..	..	..	1	3	2	2	1	1	3	..	1	2	2	..	3	3	15
SUMMARY																												
Zymotic Diseases	18	25	57	63	31	29	11	23	4	7	7	21	13	3	6	6	1	1	51	19	38	30	34	35	31	38	50	326
Parasitic do.	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	2
Dietic do.	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2
Constitutional do.	2	7	19	21	7	1	1	7	6	9	19	33	41	28	16	11	2	..	18	18	23	32	16	32	20	45	26	230
Developmental do.	68	..	1	1	..	..	1	..	..	..	..	..	..	..	4	11	9	1	17	3	11	9	11	13	5	14	13	96
Local do.	92	45	96	76	27	15	8	26	11	8	16	46	72	83	91	72	34	1	82	63	81	80	87	96	83	159	88	819
Deaths from Violence	2	1	1	1	2	3	2	4	5	5	2	5	9	8	10	1	..	..	1	6	4	3	1	20	12	6	8	61
Ill-Defined or not Specified	80	16	7	8	4	1	..	3	..	..	..	..	..	1	4	3	3	2	17	10	13	19	11	12	3	18	29	132
Totals	265	95	181	170	71	49	23	63	26	29	44	105	135	123	131	104	49	5	187	119	170	173	161	209	154	280	215	1668

TABLE A.

Table of Deaths during the year 1896, in the Urban Sanitary District of St. Helens, Lancashire, Classified according to Diseases, Ages & Localities.

WARDS.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.								MORTALITY FROM SUBJOINED CAUSES DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.																
									1	2	3	6	9	11	12	13	14	15	16	17	18	19	20	21	22
												FEVERS.													
	At all Ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		Smallpox.	Scarlatina.	Diphtheria	Enteric or Typhoid.	Puerperal.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease	Influenza.	Injuries.	All Other Diseases.	TOTAL.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)																	
Eccleston, North ..	187	88	42	8	7	26	16	Under 5	..	3	1	.	..	..	9	20	10	..	..	17	1	..	..	68	129
								5 upwds.	.	3	..	4		1	..	..	..	..	6	16	4	..	1	23	58
Eccleston, South ..	119	47	20	6	3	32	11	Under 5	..	5	..	..	..	..	..	5	5	.	2	16	..	..	1	34	68
								5 upwds.	..	1	.	2	..	..	..	..	..	1	4	16	6	..	2	19	51
Central ..	170	50	42	7	3	51	17	Under 5	..	6	1	..	..	.	4	11	10	..	2	14	..	..	..	44	92
								5 upwds.	..	1	..	3	..	..	..	..	..	1	14	20	10	1	3	25	78
Windle, North ..	173	55	28	5	12	50	23	Under 5	..	..	3	1	..	..	1	11	3	..	1	11	..	..	1	50	82
								5 upwds.	..	..	..	6	..	..	..	..	2	1	19	14	8	1	2	38	91
Windle, South ..	161	57	40	10	6	36	12	Under 5	..	7	1	..	..	..	1	8	7	..	1	22	2	..	..	48	97
								5 upwds.	..	2	..	3	2	..	..	..	1	..	5	11	9	2	1	28	64
Hardshaw ..	209	59	34	18	13	66	19	Under 5	..	5	3	..	..	..	2	1	11	..	5	12	2	..	4	49	94
								5 upwds.	..	3	..	4	..	..	..	..	2	1	17	24	9	2	15	38	115
East Sutton ..	154	38	27	8	5	56	20	Under 5	..	4	1	..	..	..	1	13	2	..	1	13	1	..	1	28	65
								5 upwds.	..	2	..	2	2	..	..	.	.	1	7	28	4	1	8	34	89
West Sutton H ..	173	60	26	12	9	49	17	Under 5	..	5	2	..	..	..	1	2	4	..	2	12	..	..	1	56	85
								5 upwds.	..	6	..	10	3	1	..	1		..	7	23	9	..	5	23	88
Parr ..	215	88	53	15	10	36	13	Under 5	..	3	4	..	..	1	19	6	4	..	2	31	..	.	2	70	142
								5 upwds.	..	3	1	5	..	1	..	..	1	1	13	13	5	..	6	24	73
Rainhill Asylum ..	107	..	..	..	5	92	10	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
								5 upwds.	..	..	..	..	..	..	..	..	1	..	22	13	3	..	..	68	107
TOTAL ..	1668	542	312	89	73	494	160	Under 5	..	38	16	1	..	1	38	77	56	..	16	148	6	.	10	442	854
								5 upwds.	..	21	1	39	7	3	..	1	7	6	114	178	67	7	43	325	814

TABLE B.

Table of Population, and of New Cases of Infectious Sickness, coming to the knowledge of the Medical Officer of Health during the year 1896, in the St. Helens Urban Sanitary District, classified according to Diseases, Ages, and Localities.

WARDS. (a)	POPULATION AT ALL AGES. Census, 1891. (b)	Estimated to middle of 1896. (c)	Aged under 5 or over 5. (e)	NEW CASES OF SICKNESS IN EACH LOCALITY, COMING TO THE KNOWLEDGE OF THE MEDICAL OFFICER OF HEALTH. 1 Smallpox.	2 Scarlatina.	3 Diphtheria.	4 Membranous Croup.	6 FEVERS. Enteric or Typhoid.	7 FEVERS. Continued.	9 FEVERS. Puerperal.	11 Erysipelas.	NUMBER OF SUCH CASES REMOVED FROM THEIR HOMES IN THE SEVERAL LOCALITIES FOR TREATMENT IN ISOLATION HOSPITAL. 1 Smallpox.	2 Scarlatina.	3 Diphtheria.	6 FEVERS. Enteric or Typhoid.	9 FEVERS. Puerperal.	11 Erysipelas.	12 Observation and other cases.
North Eccleston	8555	9579	Under 5	..	90	2	..	3	..	..	1	..	4	..	..	..	..	..
			5 upwds.	..	141	4	..	19	..	1	8	..	27	..	5	..	..	..
South Eccleston	6797	8187	Under 5	..	90	..	..	1	..	..	..	..	11	..	..	..	..	..
			5 upwds.	..	124	1	..	17	..	1	9	..	32	..	3	..	..	..
Central	8219	8321	Under 5	.	21	1	1	.	..	.	1	..	1	..	.	..	.	..
			5 upwds.	..	33	4	..	14	..	..	5	..	11	..	3	..	..	..
North Windle	7481	9152	Under 5	..	47	9	.	4	..	.	1	..	13	..	1	..	..	..
			5 upwds.	..	84	3	..	30	..	1	14	..	23	.	2	..	..	..
South Windle	8438	8699	Under 5	..	58	2	..	2	..	..	2	..	8	..	..	..	..	..
			5 upwds.	..	94		..	16	1	2	12	..	18	..	3	..	..	..
Hardshaw ...	9225	10056	Under 5	..	56	4	2	..	..	..	1	..	13	..	..	..	..	..
			5 upwds.	..	107	6	..	16	..	1	32	..	48	..	3	..	..	..
East Sutton	8250	9074	Under 5	..	49	1	1	..	..	..	..	..	3	..	..	..	..	..
			5 upwds.	..	92	4	..	5	..	1	18	..	13	..	1	..	..	..
West Sutton { Includes Sanatorium.	7418	8797	Under 5	..	47	3	2	1	1	..	2	..	11	..	..	..	..	..
			5 upwds.	..	56	5	..	18	..	3	10	..	16	..	4	1	..	..
Parr.....	8030	9270	Under 5	..	42	4	2	2	..	.	3	..	3	..		..	..	..
			5 upwds.	..	80	2	2	17	1	1	18	.	19	..	5	..	..	2
Rainhill Asylum			Under 5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
			5 upwds.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL	72413	81135	Under 5	..	500	26	8	13	1	..	11	..	67	..	1	..	..	..
			5 upwds.	..	811	36	2	152	2	11	126	.	207	..	29	1	..	2

The Compulsory Notification of Infectious Diseases Act was adopted in St. Helens on January 7th, 1891.

Patients suffering from Infectious Diseases are received free of charge into the St. Helens Corporation Sanatorium, situated at Peasley Cross (West Sutton Ward) and Old Wint (Small Pox Hospital).

TABLE C.—Deaths Registered in the St. Helens Urban

CAUSE OF DEATH.	WEEKS.													Total for 1st Quarter	WEE						
	1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	20
Small Pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	..	..	..	1	..	..	2	1	..	1	4	1	5	15	1	4	1	4	1	..	..
Scarlet Fever	..	..	2	1	..	..	1	..	1	..	..	..	1	6	1	..	..	..	..	..	1
Typhus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whooping Cough	..	..	2	..	1	2	3	2	3	1	1	4	2	21	3	3	3	4	7	2	4
Diphtheria	..	..	..	1	..	1	..	..	..	..	1	1	..	4	..	..	1	..	1	1	..
Simple or Continued Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric Fever	1	1	..	..	1	1	..	..	..	..	..	..	..	4	..	1	1	..	..	..	..
Influenza	..	1	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Other Zymotics	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Simple Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhœa	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	2	..	1	..	..
Dysentery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Remittent Fever and Ague	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia, Anthrax, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syphilis, &c.	..	1	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Erysipelas	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	..
Pyæmia, &c	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Puerperal Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..
Thrush, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Want of Breast Milk	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Scurvy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chronic Alcoholism	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rheumatic Fever	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..
Gout	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ricketts	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cancer, &c.	..	..	..	1	1	1	..	1	..	..	..	..	1	5	1	2	1	..	..	..	1
Tabes Mesenterica	1	1	..	..	..	..	..	1	..	1	1	..	1	6	..	..	..	1	..	1	1
Tubercular Meningitis	..	..	1	..	..	1	1	..	..	..	..	..	1	4	..	..	1	1	..	..	..
Hydrocephalus	..	1	..	..	1	..	..	1	2	..	..	..	..	5	..	..	..	..	..	..	..
Phthisis	..	4	2	3	2	4	4	2	3	1	2	..	4	31	1	5	4	6	2	5	2
Scrophula	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Anæmia, Diabetes, &c.	..	1	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Premature Birth, &c.	1	1	1	2	..	1	5	3	..	..	..	3	3	20	..	2	3	..	2	1	3
Old Age	..	2	..	..	1	..	1	..	..	..	2	..	1	7	1	..	2	1	1	..	1
Diseases of Nervous System	4	1	1	4	1	1	4	2	2	2	6	1	6	35	2	7	3	4	1	6	1
Convulsions	..	..	4	1	2	2	1	1	1	..	1	2	2	17	1	..	..	4	1	1	2
Eye, Ear, and Nose	..	..	..	..	1	..	..	..	..	..	2	..	..	3	..	..	1	..	..	..	..
Laryngitis, Croup, &c.	..	1	..	..	1	..	1	3	1	..	1	1	2	11	1	1	..	..	..	..	..
Bronchitis	..	1	3	7	2	2	2	3	7	5	2	1	5	40	4	4	8	3	2	4	4
Pneumonia	4	2	6	4	1	1	2	7	2	1	4	3	6	43	4	2	..	3	1	6	5
Pleurisy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Heart and Blood Vessels	..	3	..	1	2	1	2	3	1	1	1	2	3	20	2	2	..	1	1	2	..
Dentition	1	..	..	..	..	1	..	..	..	1	..	..	1	4	..	..	..	..	..	..	..
Diseases of Digestive System	..	3	2	1	..	4	1	3	4	3	1	2	1	25	2	6	3	..	2	1	..
Lymphatics and other Glands	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Urinary System	..	2	1	..	..	..	..	..	1	..	..	..	1	5	..	..	..	..	..	2	1
Generative Organs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Abortion or Childbirth	..	..	1	..	..	..	..	..	1	..	..	..	..	2	..	..	..	1	..	..	..
Diseases of Bones	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Skin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Accidental Violence	..	..	2	2	2	1	..	2	2	1	1	..	..	13	3	..	3	2	1	1	..
Homicidal Violence	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..
Suicidal Violence	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dropsy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Debility and Atrophy	2	..	3	1	4	3	..	..	3	4	1	2	..	23	..	..	1	3	..	..	..
Marasmus	1	1	..	..	..	..	1	..	2	3	..	..	1	9	1	..	..	..	..	1	..
Mortification	1	1	..	..	..	..	1	..	..	..	..	..	..	3	..	..	..	1	..	..	..
Tumour	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Abscess	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hœmorrhage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sudden Death, cause unknown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other causes, not specified	..	..	1	..	..	1	2	..	..	..	..	..	1	5	..	..	1	..	..	..	1
Males	..	9	13	20	17	15	12	14	21	18	12	19	11	32	213	18	21	25	23	7	20	17
Females	..	7	15	15	13	9	17	22	14	19	13	13	12	16	185	10	21	14	16	17	16	10
Total	..	16	28	35	30	24	29	36	35	37	25	32	23	48	398	28	42	39	39	24	36	27

ict, in weeks, during the year ending December 30th, 1896.

Quarters	WEEKS. 27	28	29	30	31	32	33	34	35	36	37	38	39	Total for 3rd Quarter	WEEKS. 40	41	42	43	44	45	46	47	48	49	50	51	52	53	Total for 4th Quarter	Total for YEAR.
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	3	..	1	..	1	1	..	..	..	..	..	..	..	6	..	1	1	..	..	..	1	..	..	..	1	..	..	..	4	38
	1	1	1	3	..	2	..	2	..	..	..	3	..	13	1	1	4	4	..	3	1	5	2	2	1	1	3	2	30	59
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	2	1	1	1	1	1	..	1	2	..	1	..	..	11	..	..	..	1	..	1	..	1	..	..	1	..	..	1	5	78
	1	..	1	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	1	..	1	..	..	1	..	..	..	2	5	17
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	..	1	1	1	..	1	3	3	2	..	1	..	2	15	1	3	2	1	1	1	1	..	1	1	..	1	2	1	16	40
	..	..	..	2	..	1	..	..	..	..	..	..	..	3	..	..	..	..	..	..	1	..	..	..	1	..	..	..	2	7
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	3	4	6	9	6	3	3	3	3	2	..	2	2	46	1	1	1	..	1	..	..	..	..	..	..	1	..	..	5	63
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	3
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	2	4
	1	..	1	..	..	1	..	..	1	..	..	..	..	4	..	..	..	..	..	..	..	..	..	2	1	..	..	..	3	8
	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	1	1	..	..	..	4	7
	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
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	1	..	..	1	..	..	1	..	..	..	1	1	..	5	1	1	..	1	1	1	..	1	2	1	..	2	2	1	14	35
	3	1	..	2	1	..	..	1	..	1	..	1	..	10	..	1	..	..	1	1	..	..	..	2	..	1	3	..	9	29
	..	..	..	2	..	..	1	..	..	..	..	..	..	3	1	..	..	..	1	..	..	..	..	..	1	..	..	..	3	13
	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
	1	1	1	4	3	..	..	3	2	1	2	4	..	22	3	2	2	1	1	4	1	4	5	3	2	3	2	..	33	130
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	1	..	4	6
	..	1	2	..	3	..	..	1	1	3	1	1	..	13	2	3	..	..	..	..	2	1	1	2	..	1	3	2	17	71
	..	..	..	..	..	..	..	..	1	..	..	..	2	3	..	1	1	1	2	1	1	1	..	..	..	..	..	..	8	25
	1	5	..	..	..	2	1	2	1	4	3	1	1	22	1	2	4	1	4	1	2	2	6	2	1	1	3	..	30	124
	..	3	..	2	3	1	..	2	..	3	2	..	1	17	..	..	2	2	..	..	..	..	3	2	..	1	4	3	17	67
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	6
	2	1	..	1	1	1	..	1	1	..	..	..	1	9	..	..	1	..	3	..	2	..	..	1	..	..	..	..	7	30
	1	1	1	1	2	1	3	4	..	2	1	1	2	20	2	3	1	5	7	3	9	9	5	7	5	2	4	6	68	171
	2	2	1	4	1	..	1	1	..	2	2	2	2	20	..	4	4	4	5	5	6	4	6	6	4	1	6	2	57	154
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
	..	..	3	1	3	2	..	1	2	..	1	3	2	18	..	2	3	5	1	1	2	1	..	1	2	3	2	3	26	77
	..	1	..	..	..	..	..	..	..	1	..	2	..	4	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	9
	3	9	2	7	4	1	9	3	3	4	3	8	5	61	4	1	1	2	5	1	1	3	3	1	3	..	..	3	28	141
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1
	..	1	2	..	..	1	..	..	1	..	..	..	..	5	1	2	..	1	..	..	1	..	..	..	3	1	..	..	9	25
	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
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	..	1	..	1	1	..	..	2	1	1	1	..	5	13	2	..	..	..	..	..	2	1	..	..	2	1	1	2	11	53
	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
	1	..	..	1	..	2	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	6
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1	3	..	1	2	4	4	2	4	..	2	1	1	25	..	5	1	2	..	2	2	3	..	1	..	2	1	..	19	73
	..	3	2	3	..	1	1	2	..	3	1	1	..	17	..	..	1	..	..	..	..	1	..	..	1	..	..	..	3	39
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
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	..	..	1	..	..	1	..	..	..	..	..	..	1	3	..	..	1	..	..	..	1	..	1	..	..	1	1	..	5	15
	18	17	13	24	18	16	15	16	18	18	16	19	14	222	13	19	13	18	21	16	24	22	18	22	21	15	19	17	258	907
	9	24	14	25	15	12	14	19	8	9	7	12	14	182	8	16	18	14	17	11	15	16	19	16	13	9	20	13	205	761
	27	41	27	49	33	28	29	35	26	27	23	31	28	404	21	35	31	32	38	27	39	38	37	38	34	24	39	30	463	1668

APPENDIX B.

Showing for each year 1889 to 1896 the number of the house in each side of the principal streets in which a case of Typhoid Fever occurred.

"R"=Right-hand side of Street. "L"=Left-hand side of Street.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Albion-st.	R	76	..	56, 106 56, 82	72	64	..	102	100
	L	167	..	133, 33	..	..	..	35	..
Appleton-st.	R	..	18	16	..	..	..	12	..
	L	41, 27, 61 15, 31½, 23, 5, 3, 19 back	25 back 11, 21	..	11, 11	29 back 29½	..	57	..
Arthur-st.	R	..	..	32	..	..	..	26	..
	L	..	..	..	41	..	..	..	..
Argyle-st.	R	44, 68	..	..	132	150	..	..	..
	L	53	..	..	..	..	65	..	..
Ardwick-st.	R	..	..	..	..	10	..	12	..
	L	..	..	..	..	5	..	..	..
Atherton-st.	R	6	..	..	..	..	..	42	..
	L	27, 7	..	15	3	..	53	..	..
Bank-st.	R	..	..	..	2	18	20	..	18
	L	..	..	..	..	..	..	..	..
Back Albert-st.	R	..	..	..	..	..	..	..	..
	L	19	..	..	..	15, 11	3 back	..	..
Back-lane	R	..	..	..	..	..	..	..	..
	L	17	17	..	7, 21, 5	13	..	..	..
Barton-st.	R	..	..	..	..	26	..	..	..
	L	..	17	..	..	..	5	..	2
Barrow-st.	R	..	..	..	..	..	..	..	..
	L	33	23	..	..	25	..	..	..
Balmer-st.	R	..	..	..	..	..	..	..	..
	L	11	..	..	..	..	29	..	39
Barber-st.	R	..	..	..	..	..	..	44	..
	L	..	15	17	..	19	..	..	..
Bickerstaffe-st.	R	38, 68 54, 4	..	..	..	64	..	44	..
	L	..	..	..	..	..	..		..
Bishop-st.	R	12	..	..	..	..	..	..	..
	L	39	..	..	7 back	..	..	..	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Birchley-st.	R	..	..	..	..	138, 80 154	..	54	..
	L	..	..	..	..	..	..	..	..
Blinkhorn-st.	R	8, 6	8	..	..	..	..	..	..
	L	..	..	..	..	..	..	..	..
Boundary-rd.	R	226	24	260	282, 158	22	..	..	..
	L	7, 25 185, 105	..	..	..	193	..	103, 137	143
Bold-st.	R	..	..	..	..	..	26	..	..
	L	..	..	..	..	..	75	77	..
Booth-st.	R	..	..	..	24	..	4	2, 16, 18	..
	L	..	..	..	..	..	..	..	..
Bruce-st.	R	68	..	64, 50	..	..	56	8, 20	..
	L	3, 41, 53	..	..	19	..	..	21	..
Brook-st.	R	74	..	..	..	60	..	26	..
	L	..	45, 23	..	..	5	37	..	..
Brynn-st.	R	..	..	18	..	..	..	..	6, 20
	L	..	..	7	..	..	43	45, 147	..
Broad Oak-rd.	R	58, 62	62	60	56	108	..	124	Blue Bell Inn
	L	..	..	..	..	..	..	..	1, 83
Bronte-st.	R	..	..	..	..	..	..	16, 4	..
	L	..	..	..	..	..	..	29	..
Campbell-st.	R	..	..	18	54	..	..	..	..
	L	51	..	65, 39	..	51, 69	59	11	..
Canal Bank W.	R	44	..	..	..	..	..	20	..
	L	..	..	..	..	..	..	..	..
Chester-st.	R	44	..	56	..	..	..	..	32
	L	..	..	..	..	..	..	..	..
Church-st.	R	..	..	..	..	..	..	30	Church House
	L	..	..	..	1	..	..	..	..
Chapel-st.	R	..	..	..	..	..	118, 58	74, 114	..
	L	45	..	125	..	..	25	..	139, 25 45
Chorley-st.	R	..	..	36, 6	..	..	..	..	..
	L	..	..	..	35	..	..	..	..
Charles-st.	R	..	..	..	..	6	..	..	..
	L	55	..	..	..	55	7	..	19
Chancery-lane	R	86	..	34	..	80	4, 84, 86 128	122	14
	L	103	..	..	..	..	..	153	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Clyde-st.	R	64, 34	..	18, 36	..	..	56	40	..
	L	55, 59, 21, 33, 17	..	55	..	..	..	15	..
Claughton-st.	R	..	..	36	76	84	..	..	40
	L	..	..	55	..	47	..	..	..
Clock Face-rd.	R	..	..	Dam House Farm	..	..	..	22 8 back	..
	L	..	..	..	..	..	..	..	..
Clarence-st.	R	..	Clarence court	..	..	..	..	8	..
	L	..	..	..	..	11	..	..	..
Copperas-st.	R	..	..	..	..	..	..	..	..
	L	7, 17	..	..	..	9 back	..	..	..
College-st.	R	66	10	154	..	124, 36 7 court	2 court	..	..
	L	155, 37	..	..	..	157, 65	4 h. 4 ct. 15	33	1
Cooper-st.	R	..	..	..	..	..	..	..	..
	L	3	3	45	..	..	..	..	..
Cowley-hill-l'ne	R	..	..	..	..	30	..	Cowley Villa	Nurses Mission Home
	L	..	..	..	..	19, 31	..	..	..
Cowley-st.	R	..	..	..	..	..	..	..	..
	L	..	..	5, 33	63	25, 33, 73	..	..	63
Corporation-st.	R	..	..	..	..	..	..	..	54, 82
	L	103, 107	..	..	..	73	..	85	..
Creswell-st.	R	..	..	..	..	..	..	..	..
	L	..	..	..	..	..	9	55	41
Cropper's-hill	R	Croppers hill House	..	2, 110 118	130	..	..	..	..
	L	..	45, 59 101	85, 59 103	95, 137	..	117	..	..
Crab-st.	R	120, 118 98	..	..	..	..	..	..	..
	L	..	..	1 h. 2 ct. 2 h. 1 ct.	..	..	37	..	..
Critchley-st.	R	..	..	..	..	2	6	..	..
	L	..	1, 3	..	..	..	..	..	..
City-rd.	R	166, 170	106	..	..	..	..	..	..
	L	183 back	..	171	..	..	..	..	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Cyril-street	R	14, 16 30, 58 51, 61	26	..	44, 30 48	..	..	..	..
	L	13, 37 33, 27	23	45, 63	57	43	..	17	**31**
Denton's Green Lane	R	..	..	40	..	..	New Zealand Villa	212	**220** Ivy Cottage
	L	45	..	..	..	..	..	..	..
Doulton-street	R	..	..	..	..	..	..	..	..
	L	55, 21	13, 21	33	..	43, 29	..	..	**31, 47**
Dunriding-lane	R	..	..	92 59	98	..	..	..	..
	L	..	..	Oban Villa	..	..	..	..	..
Duke-street	R	22 6 h. 2 ct. 5 court	66	..	28	138	22, 150 36 Clarence Hotel	36 back 48	**72, 36**
	L	117, 103, 167, 23 105, 119 7	..	..	..	123, 165 53	137 Talbot Hotel	19	**173**
Dudley-street	R	..	..	..	..	66	51	66	..
	L	..	..	..	..	..	..	..	..
East Road	R	..	..	..	..	8	..	..	..
	L	..	..	7, 11	..	..	..	..	..
Eccleston-street	R	46, 70, 52 78, 56	82	54, 60	48	..	..	..	..
	L	44, 68, 74 67, 87	..	79	..	..	..	..	**47**
Eliza-street	R	14	..	..	..	..	..	..	..
	L	15	..	..	..	..	..	..	..
Ellamsbridge road	R	44, 58	54	..	..	38	..	..	..
	L	62	..	..	..	..	..	..	..
Elbess-lane	R	2	..	..	..	..	..	..	Pig and Whistle Inn
	L	..	23	..	..	13	..	..	..
Elephant-lane	R	78, 90	24, 6 b'ck	..	..	34, 24	..	90, 136, 68, 116, 166, 206,	**72, 122**
	L	..	..	..	..	17, 15, 9 13, 19	127	99	..
Eldon-street	R	38, 40	24	70, 102	..	10	78, 92 94	12, 32, 84, 86	**104**
	L	..	..	..	29	59, 63, 55	47	35, 37, 21	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Exeter-street	R	..	..	..	18	..	..	76	80
	L	..	..	..	..	..	..	..	..
Fenton-street	R	46	56	..	44	66	..	..	..
	L	17	..	..	..	..	..	..	..
Fleet-lane	R	526, 344	12	482	4	476, 346 528, 482 484	..	..	153
	L	..	..	379, 377 381	..	523, 501 85, 411	381	..	..
Fox-street	R	40	..	42	..	34, 44	..	42	26
	L	..	..	..	15, 25, 31	..	..	..	37
Frederick-street	R	..	..	..	..	..	..	..	..
	L	115, 29 33	55, 25	..	77, 121	31, 79, 27 29, 45 119, 89 95	..	29	49
George-street	R	38	..	..	..	36	20	..	..
	L	..	..	..	..	..	19	..	..
Gladstone-street	R	18, 54, 14 72	..	..	..	..	..	..	..
	L	79	..	..	..	..	..	..	..
Glover-street	R	38, 40, 42 6, 34	..	..	..	82	..	4	..
	L	..	21	23	..	..	..	..	57, 75
Grafton-street	R	..	..	..	..	..	..	4	..
	L	..	..	..	..	..	..	21, 55	..
Grant-street	R	62, 66, 68	..	..	..	..	..	..	..
	L	..	..	..	..	47, 53	..	..	..
Green-street	R	..	..	..	..	..	8, 12	..	..
	L	..	..	..	..	..	5	7	..
Greenough-st.	R	6	..	..	..	..	..	..	..
	L	..	33	..	..	..	..	..	..
Hanover-street	R	46	..	..	..	124	102	..	..
	L	..	..	5, 39	23, 39	75	..	5, 75	75
Havelock-street	R	20, 14	48	..	..	30	..	..	..
	L	11, 15	..	..	..	..	..	11	..
Hardy-street	R	4, 24	..	..	..	..	20	..	..
	L	17	..	..	..	..	..	35	..
Hamer-street	R	12, 38	28	..	..	45, 52	..	..	16
	L	61, 25	63	..	..	5	75	..	..
Hall-street	R	..	..	..	..	34	..	32	..
	L	29, 33	..	15	..	69, 87	..	..	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Hardshaw-st.	R	..	76	..	..	62, 60	..	..	..
	L	59	19, 61	..	..	..	..	..	..
Hammond-st.	R	26	..	..	..	18, 28	..	..	..
	L	..	..	..	..	..	..	..	..
Herbert-street	R	2, 8, 18	10	..	..	140	..	..	..
	L	11	..	..	..	..	..	..	..
Higher Parr street	R	..	156	..	..	20, 100	30 6 Twist's court	..	68
	L	..	..	..	87	65, 39	75	77	77
Hope-street	R	64, 66, 84 56, 22	32	..	..	44	..	..	..
	L	31, 45	..	..	..	75, 79	..	21, 19, 49	..
Island's Brow	R	..	314	..	320	320	..	..	..
	L	..	..	..	..	..	..	..	..
John-street	R	..	..	..	..	..	..	..	..
	L	7	4	..	..	..	3	..	..
Junction-lane	R	18	100	..	..	100	..	..	..
	L	71	..	..	71	..	59, 39, 1 49	..	..
Kirkland-street	R	58	58	82, 58	..	54	22	..	18
	L	41, 15, 51 45, 17, 57	..	47, 3	..	..	..	..	..
Lewis-street	R	50	..	..	4	..	..	2	45
	L	..	..	..	..	..	..	7	..
Liverpool-road	R	120, 140	..	..	..	2	..	6	124
	L	25, 107	39	..	..	..	..	..	..
Liverpool-street	R	..	..	..	..	12	..	14	18, 24
	L	51	..	..	..	..	..	..	..
Lingholme-raad	R	94, 96 104	..	..	..	96	..	94, 118 136	..
	L	..	..	..	..	..	..	..	..
Lowe-street	R	..	58	58	74	64	..	..	..
	L	79, 53, 85 63	67	67	..	..	45, 99 73	103	..
Lord-street	R	4, 26	58	64	..	50, 8	40, 80	..	50
	L	..	..	..	..	..	..	..	..
Lugsmore-lane	R	..	..	50	..	..	..	..	..
	L	39, 19	..	..	..	..	..	..	..
Lyon-street	R	80, 16 40	88, 62 104	106	52	..	..	132, 108 48,110,52	..
	L	77, 87, 37 65, 31 25, 107	87, 77 25	93, 133 135	..	..	139	59, 119 111	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Market-street	R	..	..	..	..	..	..	..	..
	L	..	35	..	..	13, 27	..	..	..
Marshall's Cross-road	R	18, 24	..	20	..	..	..	..	..
	L	..	..	..	..	..	..	..	..
Manor-street	R	8, 10, 14	..	..	..	..	18	..	..
	L	..	..	..	..	27	51	21	..
Merton Bank-rd	R	10, 150 120, 144	172	..	..	..	14, 176	..	..
	L	..	..	..	..	..	..	..	..
Mill-street	R	..	..	14	12	..	6	10	..
	L	..	..	9	..	..	..	..	..
Mill-lane	R	..	..	..	..	..	..	..	..
	L	..	323, 343	..	..	..	..	..	Pottery
Morley-street	R	34	..	..	..	68	..	..	..
	L	..	3	..	..	..	..	41	129
Morris-street	R	..	..	..	..	..	..	..	..
	L	..	17, 27	..	..	..	..	13	..
Napier-street	R	28, 40	128	..	..	..	..	36	..
	L	123, 101 77, 59	93	49	61	83, 19 57	59, 83 49, 67	121	21, 17
New Cross-street	R	2, 36	..	32	20	..	6	6	6
	L	55, 101	57	61	51	..	..	..	..
Newton-road	R	..	..	..	..	40 Mount Pleasant	..	..	..
	L	..	61	..	..	101 Mount Pleasant	..	..	..
North-road	R	130	..	..	..	134	88	116	..
	L	..	15, 25	..	..	..	87	..	169
Norman's-road	R	102, 106	..	..	100	..	..	..	..
	L	53	..	..	..	..	..	..	..
Nutgrove-road	R	..	..	..	..	..	12	140	..
	L	..	..	..	..	..	125	101 back	..
Oldfield-street	R	..	..	10	..	..	..	..	..
	L	29	11, 17	..	..	31, 65	..	25	..
Ormskirk-street	R	82	..	..	..	80, 76 78, 84	..	..	..
	L	87	..	..	..	55	75	..	..
Oxford-street	R	6	100	..	..	56, 96, 78	76	14	6
	L	37	..	29	89	103	..	..	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Owen-street	R	..	..	..	..	..	..	..	..
	L	63, 49	..	..	55	53, 25	..	..	55
Parr-street	R	46	..	56, 10	..	..	..	..	..
	L	69, 81, 77	149	..	..	..	..	..	..
Park-road	R	..	192	..	240	..	98	..	..
	L	215, 141	141, 101	23, 223	101	171	79	..	185
Parr Moss	R	..	..	..	..	..	..	..	..
	L	3	..	..	..	3, 5, 7	..	9	..
Parr Stocks-rd.	R	82	..	..	56	..	..	..	56
	L	83	..	..	..	121	129	..	..
Peter-street	R	78, 154 130, 78 125, 65	..	132, 76 122	54	..	10, 140	108	..
	L	79, 85 103, 117	81	115, 103 95	..	115	23, 25, 39	49, 53	..
Pecker's Hill-road	R	22, 16, 34 4, 20, 12 18, 100	..	100	..	..	..	..	..
	L	21	..	..	..	..	..	..	..
Peasley Cross-lane	R	..	..	..	..	140	..	118	..
	L	139, 123	..	45, 37	91	73	..	29, 135	33, 87
Phythian-street	R	54, 16, 62 27, 5	28, 68	..	..	60	..	58	..
	L	37, 21, 13	..	..	..	..	..	..	..
Pocket Nook street	R	132	..	..	..	70, 72	..	..	..
	L	..	..	..	..	61	..	..	..
Prescot-road	R	..	..	Albion Villa	..	..	.	..	..
	L	..	..	..	..	..	Grange Farm	..	..
Queen-street	R	12	..	10	..	23	..	..	..
	L	15, 53	..	..	..	..	28	41	49
Raglan-street	R	12, 118 20, 16, 44 22, 34	..	108	48	110	102	..	..
	L	51, 107 95, 91	117	25	89	93	91	61	..
Randon-street	R	..	30	34	..	..	34	18	..
	L	13	..	..	..	3	..	3	..
Ramford-street	R	76, 190 90, 278	..	..	..	170, 128 54, 284 76	..	50	164, 180
	L	149	..	..	..	155	..	..	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Rigby-street	R	..	94	..	64	..	..	54	28, 62
	L	51	95, 39	39, 97	..	35	..	71	..
Rodney-street	R	..	..	..	..	4	..	..	28
	L	..	..	7	..	..	..	15, 43	..
Robins-lane	R	242 5	146	..	..	..	228	..	..
	L	Extens n View 235	..	13	103	..	..	137	..
Russell-street	R	28, 34, 46	..	..	..	24	..	..	..
	L	..	..	..	..	..	8 h. 1 ct.	..	..
Sandfield-crescent	R	..	22	..	14	..	..	..	..
	L	..	..	15	..	..	..	..	..
Sandon-street	R	6, 32, 30	28	..	..	8, 10	..	..	..
	L	9, 25	..	..	..	17	..	..	..
South John-street	R	6	..	..	..	46	44, 50	..	..
	L	..	..	..	..	39	..	..	..
Springfield-row	R	34	..	44	..	24	..	64	24
	L	..	..	..	..	..	..	..	..
St. Paul's-street	R	32	..	..	..	..	..	..	..
	L	9, 11	..	..	..	..	..	..	..
Stanhope-street	R	20, 140	..	..	..	..	..	100	..
	L	13, 37	1	13	..	..	..	..	..
Stanley-street	R	16, 18	..	.	..	..	..	..	..
	L	..	..	..	..	53, 43, 47	..	..	..
Sutton-road	R	314, 302, 300, 306, 16, 379, 338	24	304	12, 300	14, 392	..	..	..
	L	13, 393, 363	19	Bicker-staffe	25	371, 31	353, 371	31	11, 371
Sutton-street	R	18, 42	..	..	..	28, 44	34	..	..
	L	15, 19, 21	..	..	..	..	..	..	..
Talbot-street	R	16, 46, 34	48	102	..	96, 46, 14	..	16, 70, 90	60, 62
	L	9, 53 87, 31	..	75	21	71	..	17, 69	61, 67, 39
Taylor-street	R	10	..	..	..	..	..	..	..
	L	13, 21, 5	9	..	..	..	..	..	..
Tickle-street	R	2	..	..	..	..	..	..	..
	L	1, 21, 5, 7 27, 41	..	..	..	..	..	..	..

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Tontine-street	R	52, 20, 42 24, 30	..	..	..	..	..	..	30
	L	..	..	67	67	Robin Hood	..	..	..
Traverse-street	R	18, 42	..	..	4	32	..	16, 84	..
	L	..	..	..	23	..	73	71	..
Thatto Heath	R	..	..	..	..	..	..	..	..
	L	..	..	11 Rough-ley's Sq.	3 Ellison's Square	..	..	7 Ellison's Square	..
Union-street	R	64	..	10	..	68	..	..	..
	L	83	61	31	..	89	..	..	83
Vernon-staeet	R	20	..	..	..	12	22	..	..
	L	15	..	..	..	..	..	25	25
Victoria-street	R	28, 56	..	62	..	34, 54	..	42	..
	L	69, 61	27	..	..	71, 33, 35 57	..	..	..
Vincent-street	R	..	..	..	24	..	..	28	..
	L	..	31	..	..	..	53, 57	65	25
Waterloo-street	R	36	..	..	14	36	..	50	..
	L	23, 19	..	..	..	..	..	..	1 Waterloo Terrace
Water-street	R	..	60	..	$62\frac{1}{2}$	50 back	..	..	..
	L	..	19	37	..	..	..	59, 41	George Inn
Water-street	R	..	10	..	4	18, 24	..	..	..
	L	..	..	..	..	31	..	..	..
Watery-lane	R	18	6 back	..	300	..	46, 60, 56	..	..
	L	37	..	..	..	..	43, 39, 5	..	..
Walker's-lane	R	..	..	42	..	48	..	..	..
	L	..	..	17	..	..	..	..	..
Westfield-street	R	206, 32 172, 190 62, 176	..	..	..	..	..	82, 190	..
	L	97, 21	..	83	173	27, 175	127	155	..
Whittle-street	R	40, 36, 48	38	..	40	50	..	36	..
	L	21, 19	..	..	..	..	..	..	..
Wilson-street	R	112, 104 78, 50, 72 124, 20 92, 90	108, 50 106, 126 136	..	130	34, 90	98	86, 64, 90 28, 108 8, 120	28
	L	95, 99	..	31, 91	..	59	31	59, 25, 99	5

APPENDIX B.—Continued.

		Part of 1889	1890	1891	1892	1893	1894	1895	1896
Williamson-street	R	...	...	...	...	...	14	...	6
	L	3	11	.	...	7	...	...	..
Windle City	R	8, 2	58	...	...	...	Cook's Fold	...	28, 44
	L	..	...	..	...	...	...	...	...
York-street	R	60, 22	...	...	72	...	...	...	...
	L	29	...	...	...	11, 61	...	...	45
St. Ann's	R	...	...	..	...	...	...	...	...
	L	...	...	...	...	...	...	...	...
Gerard's Bridge	R	...	...	...	. .	...	...	...	...
	L	...	...	...	9 Barracks	1 Barracks	11	...	...
Haswell.street	R	2	...	6	...	..	...	...	...
	L	. . .	...	...	...	...	1	..	...
Greenfield-road	R	..	...	...	...	60	28, 76	126	..
	L	...	...	...	...	25	...	73	71,135,85
Windleshaw-road	R	...	...	...	...	...	...	..	...
	L	...	...	...	...	121	91, 173 191	69, 101 107	69, 65 133, 151 45

Map of the County Borough of St. Helens.

Geo. J. C. Broom. M. Inst. C.E.
Borough Engineer.

Scale - Six Inches to One Statute Mile.

Sale Urban District Council.

VID HALLEWELL,
CLERK.

Offices of School Board

Sale Feb 17 1897

Dear Sir

At your request I
send you Copy of medical
Officer's Report for year 1896
Trusting same will be
Satisfactory
I am yours truly
D. Hallewell
asst.
Clerk.